Two Sections—Section One

Railway Age

AND RAILWAY REVIEW

SECOND HALF OF 1928—NO. 4 JULY 28, 1928 SEVENTY-THIRD YEAR

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Railway Age

Vol. 85 July 28, 1928 No. 4

"The Twentieth Century Limited" along the Hudson River

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Railway Age

Vol. 85, No. 4 *July 28, 1928*

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"Taking a Chance"

IN all safety work among railway employees, whether in the transportation, the maintenance of way or the mechanical department, the hardest thing to overcome is the tendency to "take a chance". This applies not only to the rank and file, but to those in supervisory positions as well, for time is important in all branches of railway operation, and the temptation to disregard safety precautions is often hard to resist, sometimes on account of a real desire to expedite matters, and at other times because of fear of censure from superior officers if delay should occur. For this reason, criticism by such officers should be made only after all the facts are at hand, for there is no surer way to nullify training for safety than to censure disregard of it in some cases, while impliedly condemning regard for it in others. If one must take a chance, let it be in the interest of safety, and if criticism results because of delay thus occasioned it will be easier to bear than would censure received for causing an accident by disregarding proper precautions to save a little time.

The Construction Program

AN indication of the attitude of railway managements towards the future is afforded by the magnitude of the expenditures authorized for the improvement of the fixed properties, as compared with the relatively small expenditures being made for equipment. A glance of the construction news columns of the last issue shows contracts awarded aggregating more than 10 million dollars, including the enlargement of the Union station at St. Louis, Mo., the construction of a four-story express and office building for the Canadian National at Toronto, the building of six fuel oil stations, two water stations and a coaling station on the Rock Island, and the construction of 100 miles of branch lines on the Canadian Pacific. In addition, the Southern Pacific was reported as planning to undertake at once the construction of 97 miles of lines in Oregon and California, while the expenditure of $5,000,000 for track elevation in Chicago is contemplated under an ordinance recently passed, and a new company has petitioned the Interstate Commerce Commission for authority to build 150 miles of lines in Mississippi and Alabama. Following as this does the recent report of the Bureau of Railway Economics showing that the appropriations authorized during the first three months of this year for improvements to properties exceeded those made in the same period last year, it is evident that, in spite of unsatisfactory earnings, the railways are continuing their program for the improvement of their fixed properties in order that they may keep pace with the demands of traffic and of economical operation.

More Joint Rail-Air Service Announced

FOLLOWING closely the announcement of the proposed joint rail-air service between New York and Los Angeles, Cal., involving the Pennsylvania, the Atchison, Topeka & Santa Fe, and the Transcontinental Air Transport comes the report of a similar service between Chicago and the Northwest, under arrangements made by the Great Northern, the Northern Pacific and the Chicago, Milwaukee, St. Paul & Pacific with the Northwest Airways and the Transcontinental Air Transport. Travelers between the East and the Northwest who wish to save a day in their journey may do so by flying between Chicago and the Twin Cities, making direct connections at both points with fast eastbound and westbound trains. This service is expected to be started in less than a month. Announcements of further plans for joint rail and air transportation would not come as a surprise, for it is known that railways in all parts of the United States are interested in the possibilities of the co-ordination of air transportation with railway transportation, and are giving consideration to plans for such service. Opportunities for the provision of such co-ordinated service are virtually unlimited. The railways are to be congratulated because of the forward-looking spirit which they are showing in adopting or considering the adoption of the new and faster form of transportation.

Pension Funds and the Income Tax Law

IN an editorial on railway pension plan problems in the *Railway Age* of July 21, 1928, page 98 certain difficulties were pointed out in the way of building up adequate railway pension funds or reserves. It is of interest to note that the Federal Revenue Act of 1928 removed one handicap which existed up to the time of its enactment last May. An employer is now allowed deductions, according to Section 23 (q), for amounts paid to the pension trust, not only to cover the liabilities incurred during the current year, but for "a reasonable amount transferred or paid into such trusts during the taxable year in excess of such contributions." This latter amount must be "apportioned in equal parts over a period of ten consecutive years, beginning with the year in which the transfer or payment is made." This may be taken as another indication of the favor with which pension plans in industry are being viewed not alone by industry itself, but by governmental authorities as well.

May We Expect Innovations in Steel Bridge Building?

THE business of building steel bridges occupies a unique position in American industry. Although engaged in the manufacture of a highly refined product, the bridge company has no distinctive or proprietary models or makes of bridges to offer the purchaser. Except for such specialties as movable bridges or turntables, the bridges built by one manufacturer are exactly like those built by any other, because in the manufacture of no other highly involved product is the exact nature of the product determined in greater detail by the purchaser. What he asks for can usually be furnished with equal facility by a number of competing firms.

As a consequence the bridge company must confine its advertising and sales efforts to the exploitation of the service it is in a position to render by reason of the proficiency of its engineering staff, the capacity and efficiency of its fabricating shop, and the organization and equipment at its disposal for the erection of bridges. In the cases of bridges of extraordinary magnitude or unusual design, variations in the nature and extent of this service restrict competition to a few large companies, but in the building of bridges of the size and character commonly required by the railroads, it is possible to obtain bids from a considerable number of firms whose capabilities are on a comparable basis.

This situation has been brought about by the high degree of standardization that has taken place in the design and construction of steel bridges. Patents covering all conceivable ways of assembling and framing steel members to form bridges have long since expired, and by common consent, such improvements as are now made in the design of bridge spans of ordinary size are deemed to be the result of engineering skill rather than inventive genius. Furthermore, the accumulated experience of many years has been applied to the drafting of specifications for material and workmanship that cover almost every conceivable contingency in construction.

Insofar as fabrication and erection are concerned, marked progress has been made in the use of new and improved devices and methods which make for economy of construction and ability to handle heavier material and larger members, whereby it has become possible to build bridges of greater size in the face of difficulties which would have been almost insurmountable in earlier times. With respect to design, progress has been confined in large measure to refinements—a greater degree of accuracy in the application of the mechanics of materials, the correction of defects observed in older structures and a correlation of drawingroom and shop practices to the end of greater economy in construction. This work has been primarily the result of collaborative efforts of engineers representing both the purchaser and the manufacturer, largely through the agency of the American Railway Engineering Association, and the fruits of such endeavors has become common property.

What then, are the opportunities for further development in bridge engineering? Greater refinement in design, a more complete knowledge of the behavior of large members, the development of high-strength steels, improved shop facilities and erection equipment of greater capacity have made it possible to design and build bridges of longer span; and it is reasonable to expect further progress in that direction. With respect to spans of ordinary length, advance has been confined for many years to refinements that make for greater economy of design and, what is far more important, a maximum of confidence in the strength of the structure. While high-strength steels have had considerable application to spans of a length such that the dead load is the important factor in design, their use is still uneconomical in the usual spans. Further progress in this field would appear to depend on the work of the metallurgist.

The employment of antogenious welding as a substitute for the rivet is considered by some as an agency that will revolutionize steel bridge construction. The new process has been applied to a considerable number of steel frame buildings and a few bridges, but most structural engineers are still skeptical as to its possibilities. The chief obstacle to the promotion of welding in bridge work lies in the highly developed state of bridge construction as it is carried on today. Not only are standards of strength well established, but so also are the standards of control by means of which the buyer is sure to get what he wants and thus enjoy absolute confidence in the finished structure. If the welding process had been available at a time when bridge construction was not in its present highly-developed state, its introduction into that field would have been far easier than it is today, for it must now develop a technique comparable with that of the processes which it is intended to supplant.

Highway Crossing Signals

IN addition to standardizing the aspect of automatic highway crossing signals, there is also need for uniformity in the duration of their operation while the train is passing the crossing, in the interest of safety for highway traffic. Some roads arrange the control circuit so that the signal ceases to operate when the front truck of the locomotive passes the crossing. This method of control shortens the time in which the signal operates, thus reducing the expense for power supply and the wear on the equipment. Another consideration is the fact that by indicating the approach of the train, the signal has served its purpose and that the train on the crossing forms a much larger obstruction in the path of the motorist on the highway than the smaller highway crossing signal. Further, the train cuts off the view of the signal for a driver of an automobile approaching from the side of the track opposite that on which the signal is located.

On the other hand, numerous accidents occur from motorists driving into the sides of trains moving or standing on a crossing. These accidents occur particularly at night, and are frequently as serious as when the locomotive hits an automobile. In view of the fact that the control can be arranged to operate the signal as long as a train occupies the crossing, many roads provide this protection. In fact some signal engineers are of the opinion that although the highway crossing signal is not designed to present a proceed indication, a motorist approaching a crossing at night while a signal is operating, and then suddenly seeing it cease operation, assumes that the train has gone. In other words, to arrange the control so that the signal ceases to operate when a train reaches the crossing, is, in the opinion of some prominent students of the subject, in reality giving a motorist an indication that the crossing is clear.

On first consideration, it would seem that this is a detail that each road can settle in accord with its own opinions. However, highway crossing protection is provided for the guidance of the public traveling on the

highway, in contrast to ordinary signals observed by enginemen familiar with the standards of the road and the location of each signal. If automatic highway crossing signals are to be of the maximum benefit to the users of the highways, not only must the aspect be standardized but the time and duration of the period of operation should be standard.

A Life Insurance Executive Analyzes Railroad Earnings

IN an address before a recent meeting of mutual savings bankers John W. Stedman, vice-president of the Prudential Life Insurance Company, presented a searching analysis of the change in railway earnings and the distribution of them which has taken place since 1915. This analysis is published, in abstract, elsewhere in this issue of the *Railway Age*, and serious study of its findings is recommended to all who are interested in railroad prosperity.

The purpose of this analysis was to arrive at a more logical criterion for determining the availability of railroad securities as savings bank investments. The present standard is usually based upon gross revenues, which must be five times annual interest charges and rentals over a certain period of years. This criterion, Mr. Stedman asserts, is no longer reasonable, since, while gross revenues have increased tremendously in the past ten years, the percentage of gross *income* to gross revenues shrunk from 30 per cent in 1915 to 23 per cent in 1925; in other words, while interest and rentals in the latter year were twice earned, their relation to gross revenues was widened to almost 1 to 9 as compared with the 1915 relationship of 1 to 5.

Net new investment in the business in the ten-year period totaled over four billion dollars, only 27 per cent of which was raised by the sale of bonds and 17 per cent by the issue of stock. The remaining 56 per cent has been supplied from earnings, funds which in large part might otherwise have been legally disbursed in dividends to the stockholers. The Class I railroads in 1922-26 paid out to their stockholders in dividends only 51 per cent of the funds available for that purpose. In these figures, Mr. Stedman says, "he who runs may read—not prosperity, but conservatism."

Although the proportion of fixed charges has been declining, due to large investments out of earnings, Mr. Stedman does not believe that the stockholders who have "borne the brunt of the siege" will continue to be satisfied with only one-half the profits. He suggests, therefore, a new criterion for savings bank safety in railroad mortgage bond investments, viz., a restriction to carriers which for five years have earned 180 per cent of fixed charges with dividends not exceeding 80 per cent of net income. Other concrete recommendations he advances include a 40 per cent abatement in the federal corporation tax and the placing of recapture on a five-year basis.

In addition to the recommendations made by Mr. Stedman, we believe that in the facts which he brings out there is much more which resembles handwriting on the wall. To the present public policy toward the railroads—or possibly rather the imperfect carrying out of the policy regarding them—his analysis says as clearly as it could be said: "Thou are weighed in the balance and found wanting." Is any threat implied in this? We fear there is, unless the obvious lesson can be drawn from this bill of particulars and the necessary steps taken to place railway earnings, not only on a higher basis, but on one reasonably safe from constant regulatory and competitive erosion.

Farm Prices and Freight Rates

CHANGES in commodity prices during the last two years, which are shown in a bulletin recently issued by the Bureau of Statistics of the United States Department of Labor, emphasize the fallacy underlying the policy of freight rate regulation contemplated by the Hoch-Smith resolution.

That resolution assumes the existence of a general depression in agriculture and that it is due to relatively lower prices of farm products than of other commodities. The statistics published by the Department of Labor show that in June, 1928, the average wholesale price of all commodities was 47.4 per cent higher than in 1913, and the average wholesale price of farm products 51.7 per cent higher than then. Ever since August, 1927, the wholesale prices of farm products have averaged higher than those of all commodities. How long must this general condition exist before Congress will repeal a resolution which assumes that there is a depression in agriculture; that it is due to the relatively low prices of farm products; and that, because of these conditions, freight rates should be reduced on farm products?

If there were needed illustrations of the difficulties that would be encountered in trying to adjust freight rates in accordance with changes in prices, plenty of them could be drawn from this recent bulletin of the Bureau of Labor Statistics. It takes the prices of 1926 as a basis. Included in its list of commodities are 30 farm products. The prices of 18 of these were higher in June, 1928, than in 1926, and the prices of 12 were lower. Cotton was 23 per cent higher. Corn was 37 per cent higher and oats 66 per cent. In fact, practically all grain prices showed an advance, although the advance in wheat was not large. Most live stock prices showed an advance, that for steers being 45 per cent and for cows 55 per cent. Lemons were up 36 per cent and oranges 30 per cent. Beans were up 92 per cent. White potatoes, on the other hand, were selling for 55 to 75 per cent less than in 1926. The price of eggs in all the various markets showed a decline of about 20 per cent. There were declines in the prices of some kinds of livestock, including hogs and sheep. Poultry, also, was selling at slightly reduced prices.

In other words, during this period there were large changes in the prices of farm products. No doubt the producers of potatoes are having a hard time, owing to their decline in price, in making any money. Should the freight rates on potatoes be reduced, in consequence? If so, should there not be made a large advance in the freight rates on beans, the price of which almost doubled? The Interstate Commerce Commission some months ago ordered a reduction in the freight rates on deciduous fruits from California because the prices of them were low. Why should there not, on the same principle, be made an advance in the rates on lemons and oranges because their prices have increased?

With the price of white potatoes declining 75 per cent and that of beans advancing 92 per cent, with the price of timothy hay showing a decline of about 17 per cent and that of oats an advance of about 66 per cent, and numerous other similar changes occurring during a time when practically no changes in freight rates on farm products were made, it should be plain even

to those who are most predisposed to believe otherwise that the prices the farmers receive for their products are hardly due in any measure to freight rates, but almost entirely to supply and demand. If the production of potatoes exceeds the demand for them their price will decline, much more than the freight rate on them, as it actually has. If the demand for cows or beans or oats increases more in proportion than the supply, their prices will advance much more than the freight rates on them, as they actually have. If the rates on a product were reduced and the farmers, in consequence, temporarily got a higher price for it and for that reason increased their production of it, its price would decline and might become lower than it was before. The earnings of the railroads would be reduced, the condition of the farmers would not be improved and the consuming public would get the entire benefit of the reduction in rates.

The Hoch-Smith resolution, with its assumption that the prices the farmers receive for their products are largely dependent on the freight rates on them and that, consequently, the freight rates on farm products should be reduced, is still on the statute books. It is not a dead letter, for not only is the Interstate Commerce Commission continuing under it a general investigation of the freight rate structure, but very recently the commission has ordered a reduction in the rates on grapes from western New York and Pennsylvania and prescribed "reasonable ratings and bases of rates in accordance with the principles of the Hoch-Smith resolution". The changes in the prices of farm products that constantly occur show there is hardly any relationship between the prices of such products and the rates on them, but the Hoch-Smith resolution assumes that there is such a relationship and will continue to serve as a reason for whittling down railway earnings as long as it is in existence.

Satisfying the Customers

THE minutes of a recent annual meeting of the storekeepers of one of the railroads are of particular interest because of the readiness with which those present discussed their own shortcomings in the conduct of their work. "Among the sins of which our department is guilty and one which causes a great deal of annoyance and sometimes serious delays and leaves the department open to severe and merited criticism," stated one of these officers, "is the practice of shipping out material in a condition unfit for use, the material usually consisting of articles that have been returned from service and then re-issued without proper inspection. The mechanic who is given second-hand pipe fittings with the threads jammed or rusted is not going to spend much time praising the stores department." There is much in statements of this kind that supply officers can well afford to bear in mind. While the problems of material handling, the reduction of stores' expense, reclamation, the control of investment in unapplied stocks, etc., all have their place, the most important function of the supply organization continues to be that of service to the department requiring the material and the great need is to maintain good service and improve upon it.

An instance was reported recently where mechanical officers, finding their stores organization persistent in reclaiming from scrap certain articles no longer fit for use, resorted to a more thorough destruction of the material when discarding it to save the reclamation forces from the urge of salvaging it. In another report, a general car foreman described the six months previous as the worst period he had experienced in 26 years in getting material needed for repairs, and calculated losses of $2,768 because of these failures and delays to work, including such items as $218 for labor in removing wheels from empty cars to place under loads, $229 per diem charges on foreign cars held for lack of material, $1,623 for company cars held out of service awaiting materials, $224 for applying second-hand wheels instead of new, $102 for applying wrong material to foreign cars, etc. Instances like these are evidences of break-downs of the service which it is the function of the supply forces to give, and it is wholesome, therefore, to find that when studying their problems and discussing their conditions, some of the storekeepers are not forgetting to take inventory of their own shortcomings with the view to their elimination. It bespeaks the desire to satisfy the customers which the merchant will always agree is indispensable to the success of a business.

Support Progressive Foremen

ONE of the greatest forces contributing toward reduced locomotive and car maintenance costs is the interest of conscientious, enterprising and able shop foremen and supervisory officers. Not all foremen possess all of these qualifications, but enough of them do to serve as the leaven which may in time raise the general standard of shop operation and effect economies of the greatest importance. Railroads can well afford to encourage progressive foremen by giving prompt and careful consideration to their suggestions for shop improvement and, wherever possible, singling these foremen out for advancement. They are the most important single instructive and inspirational agency in any shop. They *know* from constant daily contact what changes in equipment and methods are needed for the best results.

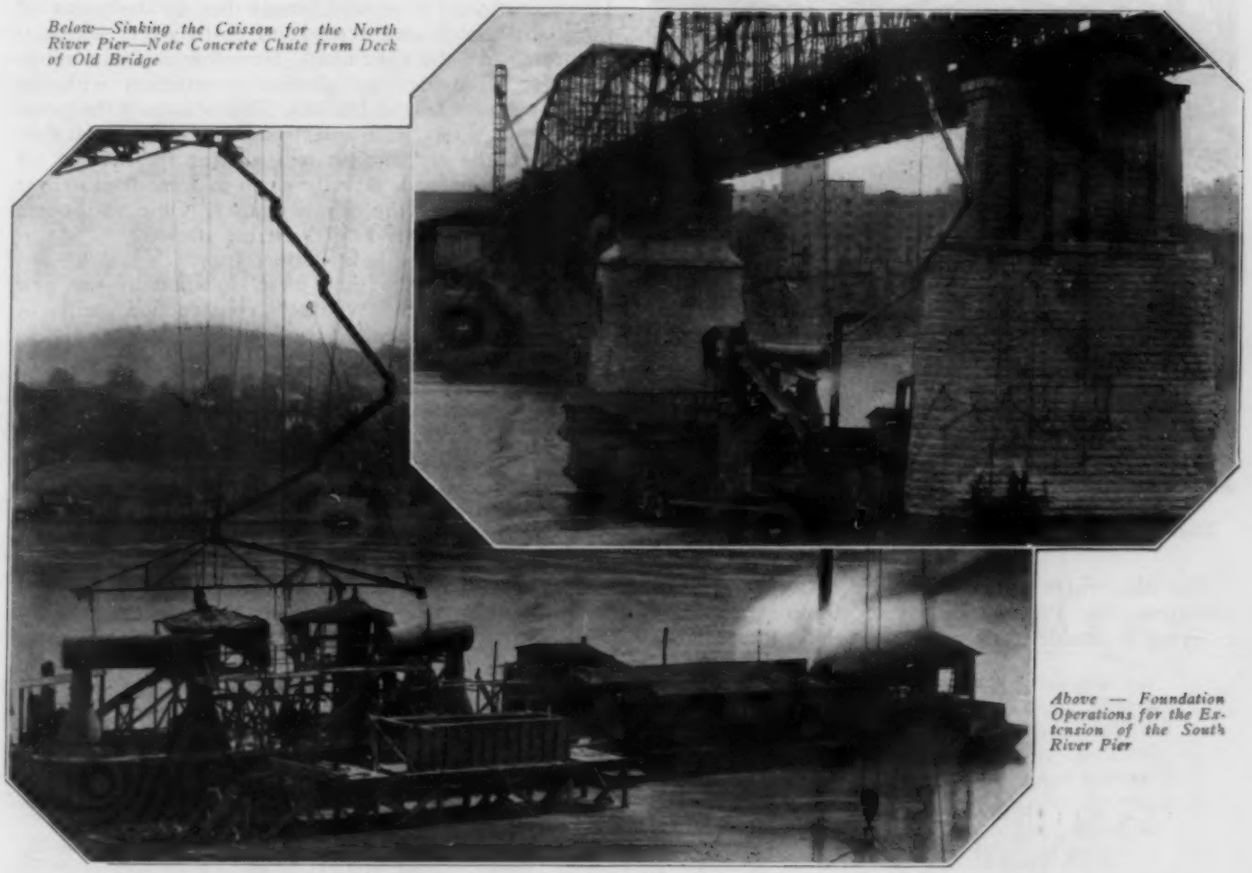
Indicative of the attitude of the up-to-date shop supervisory officer is the remark made by a toolroom foreman who said, "I believe that the repair of steam locomotives can be handled on as efficient a business basis as the building of locomotives." This foreman then made a plea for the more extensive use of jigs and devices to save lay-out time and turn out more accurate work. He urged the more general installation of modern grinding and milling machines, and particularly of the cutting tools and holding fixtures without which these machines lose a large part of their value. He said that tank hose nuts, for example, formerly machined in an engine lathe in thirty minutes each, can be turned out on a modern turret lathe, properly tooled, in three minutes, proportionate savings being possible on wrist pin nuts, crank pin nuts, grease cup bushings, etc. This foreman was able to reduce the cutting time for boiler tubes one-third by designing a special tool for the job. He also developed a continuous milling operation for injector rod universal joints, comparable with the best machining practice in any industry.

It is a mistake to assume that modern production methods are inapplicable to railroad repair shop operations, many of which lend themselves quite well to organization on a labor-saving and time-saving basis. Railway shop foremen who have sufficient vision to familiarize themselves with modern production methods, and determine the extent to which they can be successfully applied, should receive the whole-hearted support of their managements.

C. & O. To Renew Bridge Over Ohio River

Project at Cincinnati also includes separation of grades with streets through Covington, Ky.

Below—Sinking the Caisson for the North River Pier—Note Concrete Chute from Deck of Old Bridge



Above — Foundation Operations for the Extension of the South River Pier

WORK is now in progress on the substructure of a new railway bridge across the Ohio river at Cincinnati which is being built for the Chesapeake & Ohio to replace an old structure erected 40 years ago. As in the majority of such replacements, inadequate capacity of the old superstructure is responsible for the new project. The old river piers, which were carried to rock foundation by the pneumatic process, are of unquestioned stability and such deterioration of the shafts as has taken place can readily be corrected. As a consequence replacement has proceeded according to a rather unusual plan. The new bridge is being built immediately downstream from the old one (the new center line being 42.16 ft. south of the old center line) with one pier built as an extension of one of the old piers and the others independent only because of a difference in the span lengths. The old structure, which has served also as a highway toll bridge to carry highway traffic on cantilever roadways, is to be retained in service as a highway bridge.

The old bridge was built in 1886-8 by the Covington & Cincinnati Elevated Railroad & Transfer & Bridge Company. This is a subsidiary of The Chesapeake & Ohio and not only owns the bridge and its approaches and the approach tracks on the Kentucky side to Saratoga alley, in Covington, a distance of about 3,600 ft. south of the river bank, but serves also as a terminal operating company from Cincinnati to K C Junction where the Chesapeake & Ohio is joined by a line of the Louisville & Nashville. The bridge is used daily by 34 passenger and express trains of the Chesapeake & Ohio and the Louisville & Nashville, all of which move across the bridge twice because both railroads maintain engine terminals and coach yards on the Kentucky side. It is also used by four passenger trains of the Chesapeake & Ohio of Indiana, as well as the many transfer trains handling freight of the two railroads between the two sides of the river.

New Bridge to Have Longer Span

The present structure consists of one 550-ft. channel span and two 490-ft. flanking spans, measured center to

center of piers, but the new bridge, in conformity with requirements of the United States War department, will have a channel span of 675 ft. center to center of piers, with flanking spans of 450 ft. each. With the south channel pier of the new bridge built as an extension of the old south pier, the new north channel pier will be located 125 ft. north of the old pier.

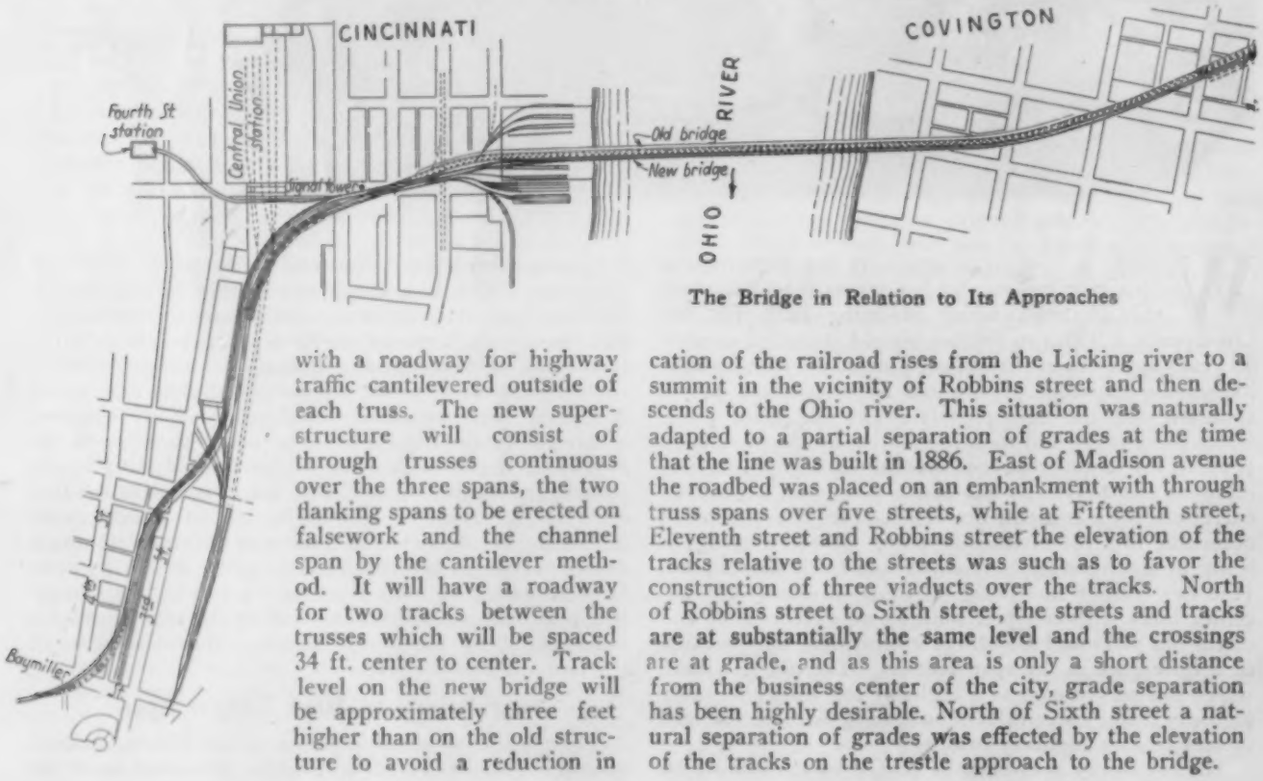
The Completed South Shore Pier for the River Bridge

The old bridge superstructure consists of through, pin-connected, Pennsylvania-type, simple truss spans carrying a double-track roadway between the trusses with a roadway for highway traffic cantilevered outside of each truss. The new superstructure will consist of through trusses continuous over the three spans, the two flanking spans to be erected on falsework and the channel span by the cantilever method. It will have a roadway for two tracks between the trusses which will be spaced 34 ft. center to center. Track level on the new bridge will be approximately three feet higher than on the old structure to avoid a reduction in the established waterway headroom as a consequence of the use of a thicker floor.

The Ohio River bridge is a high-level crossing, with the result that on the Ohio side, where the terminal tracks are at a level approximately 50 ft. below those on the bridge, a long approach is necessary. This approach has three arms and embraces a total of about 6,200 ft. of steel viaduct and a considerable length of wooden trestle. The main branch extends westward to a connection with the tracks of the Cleveland, Cincinnati, Chicago, & St. Louis, at Baymiller and Front streets and affords the means of access to the Central Union station. A second branch lies to the north of the main branch and extends to Fifth street where it connects with the Cincinnati, Hamilton & Dayton terminal and provides the physical connection with the Chesapeake & Ohio of Indiana. This branch is the property of the Cincinnati Interterminal Railroad, a subsidiary of the corporation which owns the bridge. A third branch extends directly north to a small passenger station owned by the Chesapeake & Ohio at Fourth street, known as the Fourth Street station.

In addition to the new viaduct approach which must be built by reason of the offset location of the new bridge, considerable viaduct construction will be entailed in replacing portions of the existing structure, double-tracking the lower end of the main branch and providing a second track on the Interterminal branch. On the Kentucky side of the river, 1,600 ft. of viaduct approach will be replaced by a new viaduct built alongside, but the construction of a south approach to the river bridge is closely inter-related with a project for the separation of grades with the streets in Covington, Ky.

The line of the Chesapeake and Ohio through Covington, embraces a stretch of about two miles over a rather winding alinement between the Licking river and the Ohio river. The natural ground level along the location of the railroad rises from the Licking river to a summit in the vicinity of Robbins street and then descends to the Ohio river. This situation was naturally adapted to a partial separation of grades at the time that the line was built in 1886. East of Madison avenue the roadbed was placed on an embankment with through truss spans over five streets, while at Fifteenth street, Eleventh street and Robbins street the elevation of the tracks relative to the streets was such as to favor the construction of three viaducts over the tracks. North of Robbins street to Sixth street, the streets and tracks are at substantially the same level and the crossings are at grade, and as this area is only a short distance from the business center of the city, grade separation has been highly desirable. North of Sixth street a natural separation of grades was effected by the elevation of the tracks on the trestle approach to the bridge.

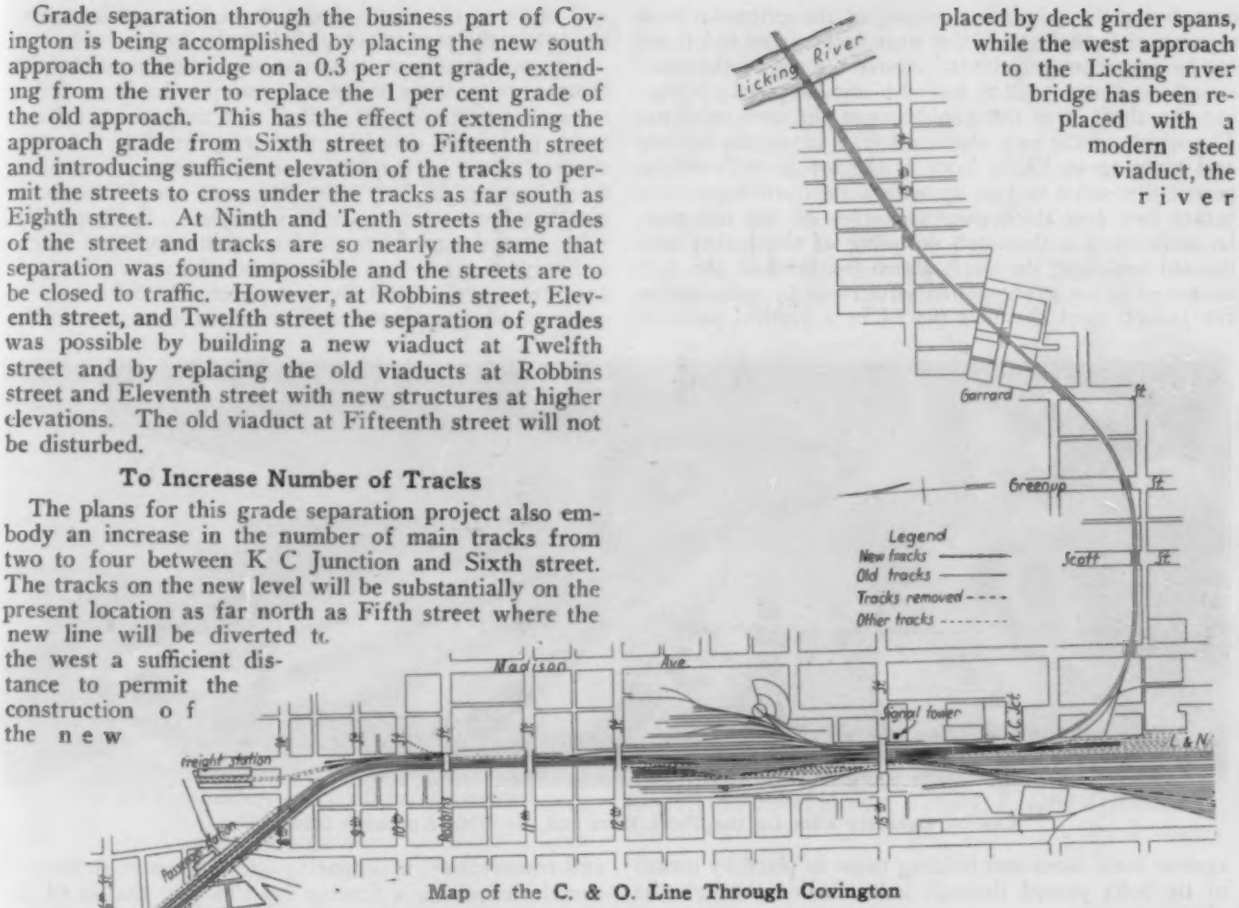


The Bridge in Relation to Its Approaches

Grade separation through the business part of Covington is being accomplished by placing the new south approach to the bridge on a 0.3 per cent grade, extending from the river to replace the 1 per cent grade of the old approach. This has the effect of extending the approach grade from Sixth street to Fifteenth street and introducing sufficient elevation of the tracks to permit the streets to cross under the tracks as far south as Eighth street. At Ninth and Tenth streets the grades of the street and tracks are so nearly the same that separation was found impossible and the streets are to be closed to traffic. However, at Robbins street, Eleventh street, and Twelfth street the separation of grades was possible by building a new viaduct at Twelfth street and by replacing the old viaducts at Robbins street and Eleventh street with new structures at higher elevations. The old viaduct at Fifteenth street will not be disturbed.

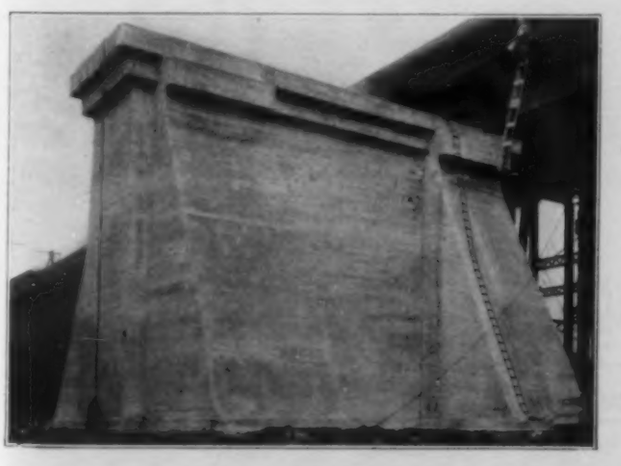
To Increase Number of Tracks

The plans for this grade separation project also embody an increase in the number of main tracks from two to four between K C Junction and Sixth street. The tracks on the new level will be substantially on the present location as far north as Fifth street where the new line will be diverted to the west a sufficient distance to permit the construction of the new approach viaduct without interference with the old structure.



Map of the C. & O. Line Through Covington

The project of grade separation in Covington also embodies the separation of grades at Madison avenue by elevating the tracks 4 ft. and depressing the street a sufficient amount to obtain a clear headroom of 13 ft. East of Madison avenue, the old through truss spans which carry the tracks across the streets are being replaced by deck girder spans, while the west approach to the Licking river bridge has been replaced with a modern steel viaduct, the river bridge itself having been reconstructed about five years ago.



The Pier on the Ohio Shore Was Designed for Stability Against Longitudinal Forces Imposed on the Superstructure

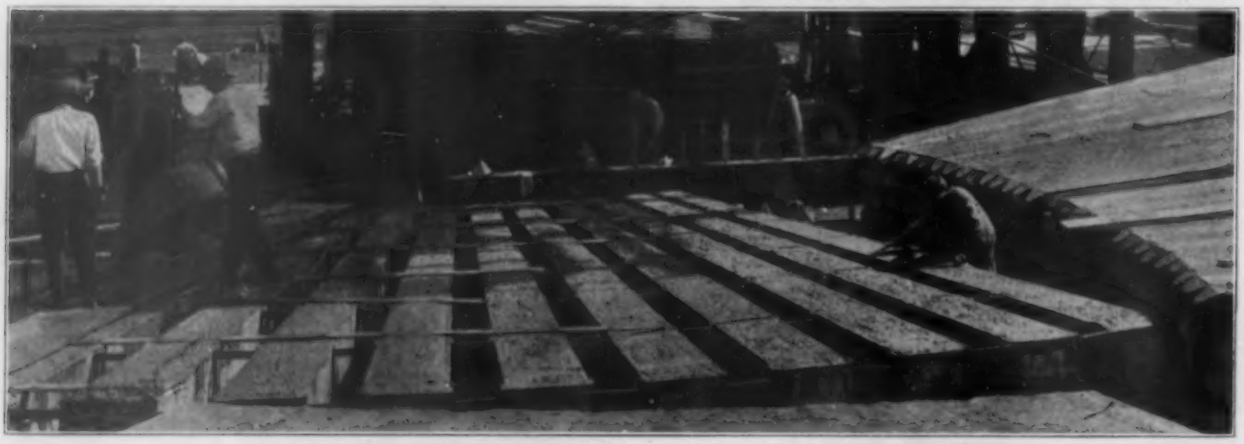
The substructure work on the new bridge entails the construction of a new north channel pier, new north and south shore piers, and the extension to and jacketing of the old south channel pier and the jacketing of the old north channel pier above the level of the belt course. The two shore piers are supported on concrete pile foundations while the river pier work involves the sinking of footings to bed rock at Elevation 375, or 64 ft. below normal pool level, which is at Elevation 439.3. The maximum recorded river stage, that of the flood of 1884, is at Elevation 498.2. Diamond drill borings carried into rock to a depth of 15 ft., disclosed alternate strata of shale and limestone of varying degrees of hardness. The rock is covered with an overburden of from 40 to 50 ft. of alluvial deposit.

Both Open Dredging and Pneumatic Work on River Piers

The sinking and excavating of the river piers is being conducted by open dredging, but the work will be completed by the pneumatic process in order to clean out the working chambers and fill them with concrete in the dry. The north river pier has a caisson 84 ft. by 34 ft. in plan, with an approximate height of 45 ft. The shaft will have round nosings for a height of 77 ft. 8 in. with a rectangular section above that level. In addition to reinforcing the faces of the pier, the bearings will be provided with a grillage of 24-in. 90-lb. I-beams placed longitudinally at a transverse spacing of 24 in.

Complication in the sinking of the caisson for the extension of the south river pier is being avoided by

considering the caisson or footing of the extension as a separate unit that clears the west face of the old footing by approximately 10 ft. Above the top of the caisson, the extension will be joined to the old pier by bridging the shaft over the gap between the two caissons. The width of the new shaft, 30 ft. 9 in. at the bottom and tapering to 19 ft. 1 in. at the top is sufficient to permit this shaft to line up with a reinforced concrete jacket two feet thick over the sides of the old pier. In addition to a thorough doweling of the jacket into the old masonry, the shaft above the level of the belt course is to be strengthened effectively by encasing in the jacket, steel channels placed in a vertical position against both faces and holding them in place by means of tie bolts passed through holes drilled through the pier.



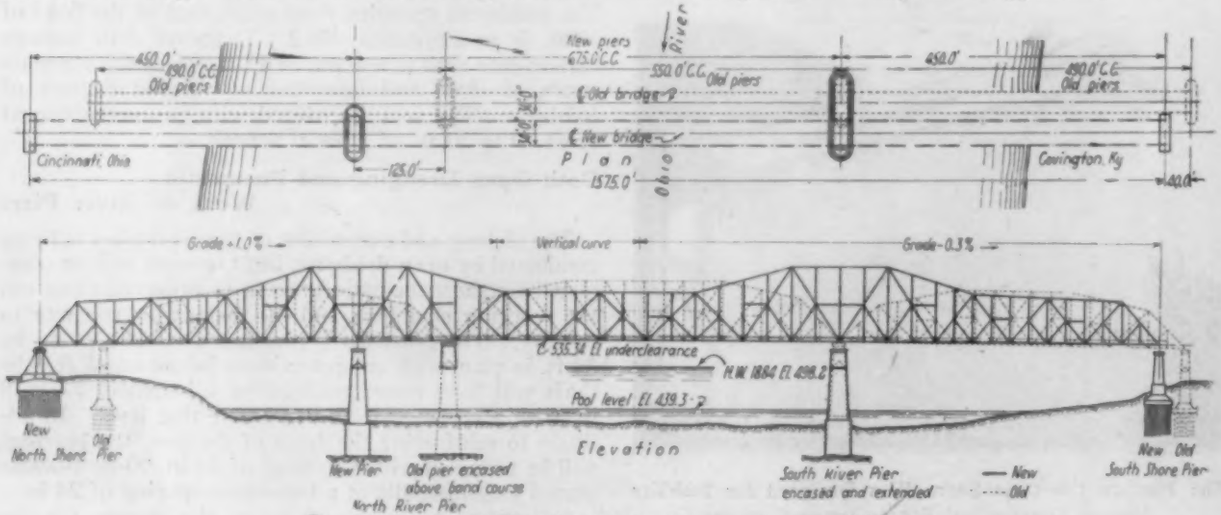
Casting Concrete Piles for the Shore Piers and the Ohio Approach Structures

Weight Division, Supports and Load Distribution

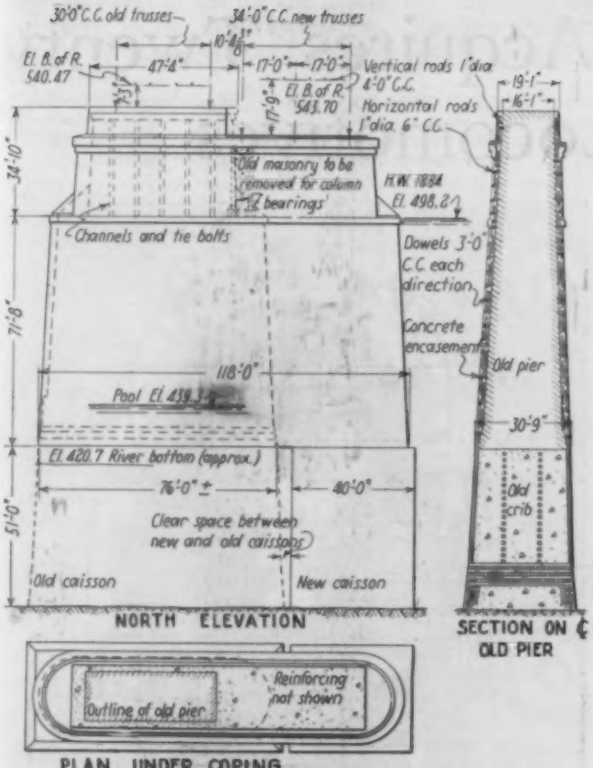
The weight of the new superstructure is to be divided equally between the old pier and its extension. The half-cone topping over the west nosing of the old pier will be removed to provide a seat for a steel tower enclosed in the pier shaft and placed concentrically under the bearing of the new east truss, so that the load from this truss will be transferred directly to the west end of the old pier. The top of this tower will not come directly in contact with the bearing shoes but will serve as the east support for a beam grillage embedded in the pier two feet below the bridge seat.

The two shore piers are to be supported on reinforced concrete piles, those under the Ohio pier having a penetration ranging from 10 to 25 ft, and those for the Kentucky pier being driven to depths up to 45 ft. As the superstructure of the bridge is continuous it can have fixed bearing on only one pier, and the Ohio shore pier has been selected for this purpose. Consequently it has been designed for stability against assumed longitudinal forces imposed on the superstructure. The pile base necessary to meet these requirements calls for 400 concrete piles, arranged in 20 rows, both longitudinally and transversely, at a spacing of 3 ft. center to center, thereby requiring a footing for this pier that is 61 ft. square.

The load of the superstructure is distributed over this large base area by means of a pier shaft having base dimensions of 52 ft. 10 in. by 13ft. 10 in. with heavy buttresses on each side in the planes of the trusses. Resistance to longitudinal thrust afforded by the foundation piles is supplemented by a row of reinforced concrete sheet piles 8 in. thick and 25 ft. long, driven along the north and south edges of the footing. The pier has been proportioned with exceptionally good taste and presents an impressive appearance.



General Plan and Elevation of the New and Old Bridges



How the South River Pier Is Being Remodeled

The United Gas and Improvement Contracting Company of Philadelphia, Pa. (recently consolidated with the Engineers and Constructors, Inc.,) has the contract for the four river piers. A. H. Callighan Company, of Richmond, Va., has the contract for the masonry work on the Ohio portion and Boxley Brothers Company, of Orange, Va., is the contractor for masonry and excavation work required for the Kentucky approach trestle as well as for the grade separation work in Covington. Concrete piles required for the river piers and the Ohio approaches are being made at the site of the work by Whitney & Sons Company, Kansas City, Mo., while those being driven by Boxley Brothers are being furnished by the Massey Concrete Products Company, Chicago.

Concrete aggregates for the river piers are being delivered on barges to the Ohio bank at the bridge site and are transferred to storage bins over a concrete mixer plant by stiff-leg derrick. The mixer plant is provided with an elevating tower of sufficient height to deliver the concrete to narrow-gage cars operated on a track laid on the west roadway of the old bridge, which has been abandoned for highway travel. A gasoline locomotive hauls these cars across the bridge so that the concrete may be dumped into spouts installed at the locations of the four piers.

Work Is Done Under Supervision of Chief Engineer

The Ohio River bridge and grade separation project is being handled under the direction of C. W. Johns, chief engineer of the Chesapeake & Ohio, Richmond, Va., with G. G. Lancaster, assistant engineer at Covington, Ky. in direct charge. The J. E. Greiner Company, consulting engineers, Baltimore, Md., are the designers of the river bridge.

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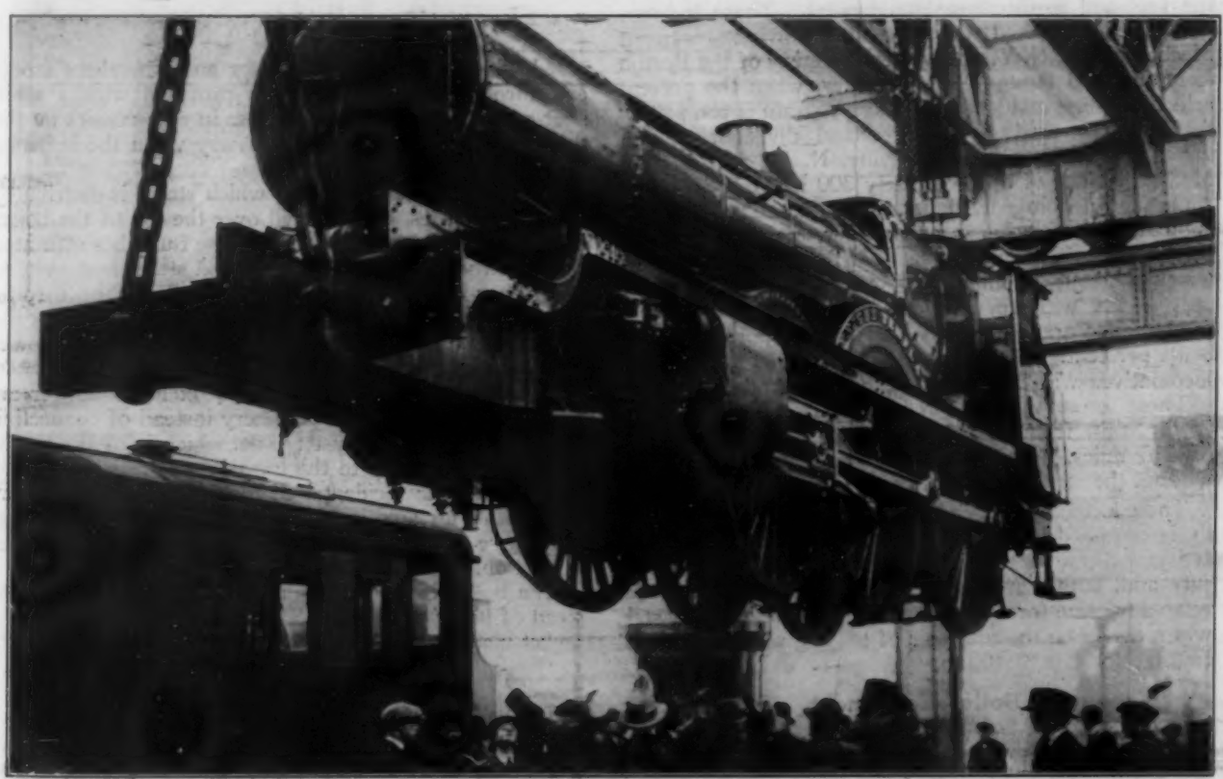


A Group of Eton Students Visit the Swindon Shops of the Great Western

Boston & Maine Acquires Twenty 2-8-4 Type Locomotives

Have 100 sq. ft. of grate, four-wheel trailer trucks and 60 per cent maximum cut-off—Tractive force, with booster, 81,400 lb.

THE Boston & Maine has placed into service 20 2-8-4 type locomotives designed to handle fast freight or to enter passenger service if needed. These locomotives, built by the Lima Locomotive Works, Inc., parallel closely the general design of the Lima A-1 locomotive. A glance at the table giving a comparison of the principal dimensions of the A-1 with the new B. & M. 2-8-4 locomotives, show that the principal difference lies in the weights in working order. The total engine weight of the A-1 is 385,000 lb., while that of the B. & M. locomotive is 393,000 lb. There is a slight increase in favor of the B. & M. locomotive in the total evaporative heating surface, which can be attributed to the inclusion of two Nicholson thermic syphons on the B. & M. locomotive. The factor of adhesion for the A-1 is 3.58 and for the B. & M. locomotive is 3.6. The rated tractive force is the same for both locomotives.

The purchase of these locomotives was prompted by a necessity for speedier and more flexible operation, and a desire for the most economical performance, both from the fuel and maintenance standpoints. These locomotives will be operated on the Fitchburg division, between Mechanicsville, N. Y., the western gateway of the Boston & Maine, and Boston, Mass. Later, when the present bridge building and strengthening program is completed, they will be used on the Portland division, making through runs from Mechanicsville, N. Y., to Portland, Me., a distance of approximately 300 miles.

On the Fitchburg division, westbound, the ruling grade is on Ashburnham hill, near Gardner, Mass., about midway between Mechanicsville and Boston. The grade, which is about 12 miles long, averages about 1.22 per cent which, with curve allowance, gives an equivalent compensated grade of 1.25. Eastbound, the ruling grade is .91 per cent. The Portland division, over which these locomotives will later operate, has no grade problem.

These locomotives will reduce the running time of a 75-car train from Mechanicsville to Boston, a distance of 210 miles, by two hours. This run will be made without the services of a helper engine.

These locomotives weight 393,000 lb., of which 250,200 lb. is on the drivers and 104,000 lb. on the four-wheel articulated trailing truck. They carry 240 lb. boiler pressure and, with a maximum cut-off of 60 per cent, develop a tractive force of 69,400 lb. Including the booster, which drives on the rear pair of trailing wheels, the total tractive force is 81,400 lb.

Boiler Equipment

Aside from the size of the firebox, which has a grate area of 100 sq. ft., the boiler does not differ materially from the usual type of design. It is of the extended wagon top type, the first course of which is 88 in. in diameter and the third course 94 in. The boiler is provided with a Type E superheater and Chambers front-end throttle. The dry pipe is provided with a main shut-off valve in the dome for use in case repairs on the throttle or superheater are necessary when the boiler is under pressure.

Front End of the Locomotive, Showing the Coffin Feedwater Heater

There are two turrets from which steam is distributed to the auxiliaries, both located over the top of the boiler just in front of the cab. One of these furnishes saturated steam to the injector, lubricators and steam heat system. The other draws superheated steam from the throttle pipe connection to the superheater header for use in the air compressor, stoker, booster, headlight turbine, blower and whistle.

The petticoat pipe in the smokebox has a blower arrangement in the bottom periphery instead of connecting the blower to the exhaust nozzle, which is of the Goodfellow type. Owing to the location and construction of the steam dome incidental to the front-end throttle arrangement, an auxiliary inspection dome is located on the course next to the firebox to facilitate interior boiler inspection.

The boiler lagging studs are welded to the boiler instead of being tapped in. The lagging is covered with a jacket made from copper-bearing steel.

The Machinery

The boiler is supported on frames made of manganese-nickel cast steel. The pedestal toes are of minimum depth and made wide enough to take collared pedestal studs which, in conjunction with the outer pedestal bolts, hold the pedestal cap in place. This arrangement draws the cap directly to the toes and eliminates the

fulcrum effect at the toe and consequent flexure of the cap found in the usual application. The key arrangement at the frame and saddle fit is the double wedge type with a bolt.

All of the pedestals are equipped with Franklin automatic wedges with parallel-faced floating plates and single taper wedges. The shoes are made of special bronze.

Table of Dimensions, Weights and Proportions of the Boston & Maine 2-8-4 Type Locomotives

Railroad	Boston & Maine
Type of locomotive	2-8-4
Service	Fast freight
Cylinders, diameter and stroke	28 in. by 30 in.
Valve gear, type	Baker, long travel
Valves, piston type, size	14 in.
Maximum travel	8¾ in.
Outside lap	2⅜ in.
Exhaust clearance	1/16 in.
Lead in full gear	¼ in.
Cut-off in full gear, per cent	60
Weights in working order:	
On drivers	250,200 lb.
On front truck	38,800 lb.
On trailing truck	104,000 lb.
Total engine	393,000 lb.
Tender, loaded	216,400 lb.
Wheel bases:	
Driving	16 ft. 6 in.
Total engine	41 ft. 8 in.
Total engine and tender	80 ft. 3¾ in.
Wheels, diameter outside tires:	
Driving	63 in.
Journals, diameter and length:	
Driving, main	12 in. by 14 in.
Driving, others	11 in. by 13 in.
Front truck	6½ in. by 12 in.
Trailing truck	Front, 6½ in. by 12 in. Rear, 9 in. by 14 in.
Boiler:	
Type	Wagon top
Steam pressure	240 lb.
Fuel	Bituminous
Diameter, first ring, outside	88 in.
Firebox, length and width	150⅛ in. by 96⅛ in.
Arch tubes, number and diameter	2—3½ in.
Tubes, number and diameter	86—2¼ in.
Flues, number and diameter	204—3½ in.
Length over tube sheets	20 ft.
Grate area	100 sq. ft.
Heating surfaces:	
Firebox	284 sq. ft.
Arch tubes and two syphons	121 sq. ft.
Tubes	1,008 sq. ft.
Flues	3,718 sq. ft.
Total evaporative	5,131 sq. ft.
Superheating	2,111 sq. ft.
Comb. evaporative and superheating	7,242 sq. ft.
Special equipment:	
Superheater	Type E
Feedwater heater	Coffin, Type C
Stoker	Dupont Simplex, Type B
Booster	Franklin
Tender:	
Style	Rectangular
Water capacity	12,000 gal.
Fuel capacity	18 tons
General data estimated:	
Rated tractive force, 60 per cent	69,400 lb., with booster, 81,400 lb.
Weight proportions:	
Weight on drivers ÷ total weight engine, per cent	64.2
Weight on drivers ÷ tractive force	3.6
Total weight engine ÷ comb. heat. surface	54.3
Boiler proportions:	
Tractive force ÷ comb. heat. surface	9.58
Tractive force × dia. drivers ÷ comb. heat. surface	604
Firebox heat. surface ÷ grate area	4.05
Firebox heat. surface, per cent of evap. heat. surface	7.8
Superheat. surface, per cent of evap. heat. surface	41.2
Comb. heat. surface ÷ grate area	72.42

Design of Spring Saddles on Driving Boxes

The spring saddles on the driving boxes are designed to bear on the ends and not in the center. This feature assures a stable setting of the saddle and eliminates uneven wear on the saddle seat and consequent relining with inserted plates. Eventual wear can be taken care of by building up with autogenous welding and then machining.

The main rods, side rods, driving axles and crank pins are made from normalized carbon-vanadium steel. The rod arrangement is the Lima tandem extended main rod type with floating bushings on the main pins.

Comparison of the Lima A-1 Locomotive and the Boston & Maine Locomotives of the Same General Design

Type	A-1	B. & M.
Cylinders, diameter and stroke	28 in. by 30 in.	28 in. by 30 in.
Cut-off in full gear	60 per cent	60 per cent
Boiler pressure	240 lb.	240 lb.
Weights in working order:		
On drivers	248,200 lb.	250,200 lb.
On front truck	35,500 lb.	38,800 lb.
On trailing truck	101,300 lb.	104,000 lb.
Total engine	385,000 lb.	393,000 lb.
Diameter drivers	63 in.	63 in.
Heating surfaces:		
Firebox, incl. arch tubes *	337 sq. ft.	405 sq. ft.
Tubes and flues	4,773 sq. ft.	4,726 sq. ft.
Total evaporative	5,110 sq. ft.	5,131 sq. ft.
Superheating	2,111 sq. ft.	2,111 sq. ft.
Comb. evaporative and superheating	7,221 sq. ft.	7,242 sq. ft.
Grate area	100 sq. ft.	100 sq. ft.
Rated tractive force:		
Engine	69,400 lb.	69,400 lb.
Engine and booster	82,600 lb.	81,400 lb.
Factor of adhesion	3.58	3.6

* Each B. & M. locomotive is equipped with two Nicholson Thermic Syphons.

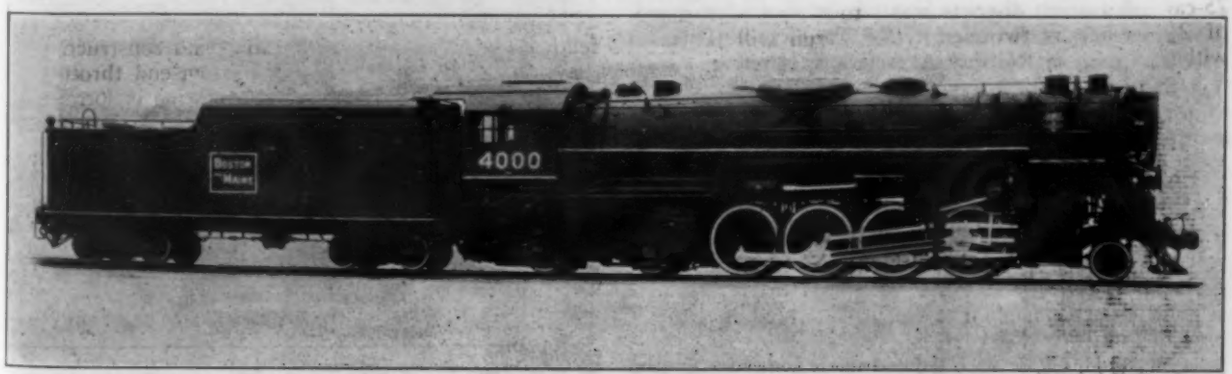
The locomotives are equipped with commonwealth ashpans with horizontal sliding doors and a mechanical dump. This ashpan is supported in the frame of the articulated four-wheel trailing truck, on which is also mounted a Franklin booster. The Franklin power reverse gear is synchronized with the booster.

Method of Lubrication

The locomotives are equipped with eight-feed, force-feed lubricators for lubricating the steam chests, guides and air compressor steam cylinders. A hydrostatic lubricator provides lubrication for the Simplex Type B stoker and booster. All of the valve gear bearings are provided with Bassick Alemite high-pressure grease fittings. Speedee grease cups are used on the rods.

Water Supply

Water is supplied from the left side of the tank through the Coffin feedwater heater and from the right side through a non-lifting inspirator. A thermometer well is located in the feedwater heater delivery pipe to facilitate taking feedwater temperatures when desired. The shut-off valve in the pipe from the cylinder exhaust to the feedwater heater is equipped with a locking device to insure the valve remaining open at all times while in service.



Boston & Maine 2-8-4 Type Freight Locomotive

Barco flexible metal joints are used between the engine and tender for air and steam heat connections. The air, signal and steam heat terminals at the rear of the tender are secured on movable supports which afford flexibility in lateral movement.

Steam heat and air signal equipment were applied to permit incidental passenger service without preliminary preparation.

Cab Equipped with Lockers and Fireproof Lining

The cab is lined with fireproof Agasote. Metal sash is used on the sides. Each cab is equipped with a clothes locker.

The locomotives are equipped with continuous automatic train control.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended July 14 amounted to 1,024,534 cars, an increase of 173,929 cars as compared with the total in the holiday week preceding, and an increase of 7,140 and a decrease of 51,838 cars respectively as compared with loading in the corresponding weeks of 1927 and 1926. Loading of grain and grain products and miscellaneous freight was larger than a year ago. Coal loading amounted to 148,969 cars, a decrease of 4,009 cars as compared with the corresponding week of last year. Loading in the Northwestern, Central Western and Southwestern districts was larger than a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

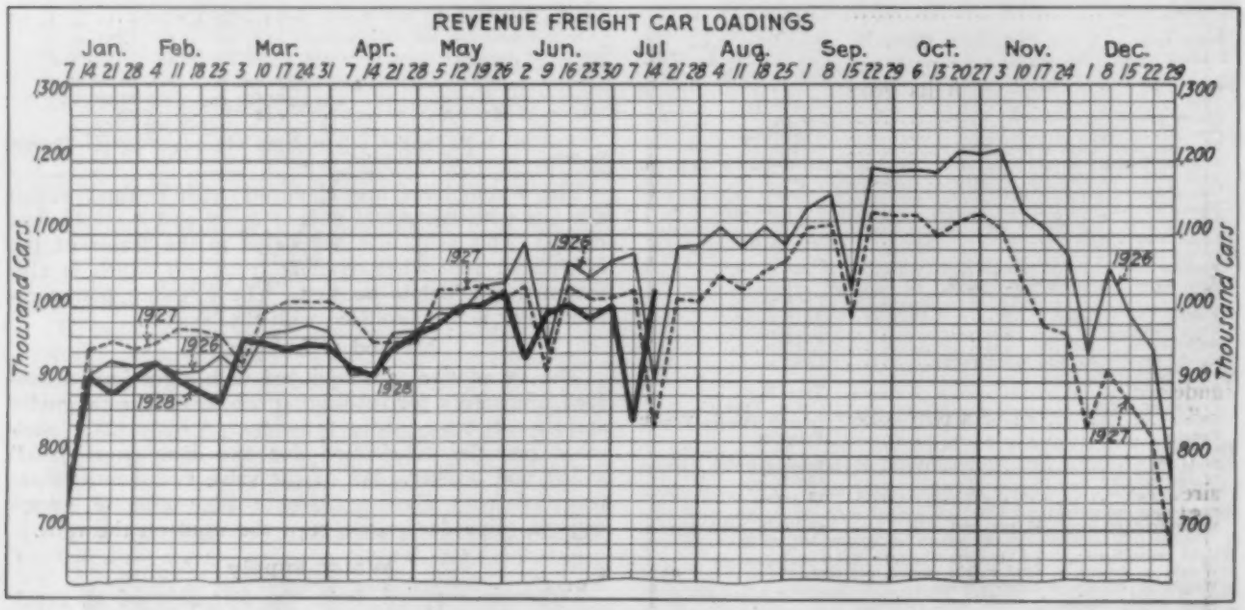
Week Ended Saturday, July 14, 1928

Districts	1928	1927	1926
Eastern	231,315	232,351	241,423
Allegheny	205,493	206,003	218,485
Pocahontas	54,602	58,650	60,372
Southern	138,529	149,803	151,080
Northwestern	158,709	157,446	168,084
Central Western	155,348	140,265	159,278
Southwestern	80,538	72,876	77,650
Total Western Districts	394,595	370,587	405,012
Total All Roads	1,024,534	1,017,394	1,076,372
Commodities			
Grain and Grain Products	53,445	42,702	55,719
Live Stock	25,160	27,458	27,255
Coal	148,969	152,978	183,195
Coke	8,801	9,660	11,218
Forest Products	61,308	66,933	69,579
Ore	65,982	66,121	75,850
Mdse. L.C.L.	253,627	255,859	255,901
Miscellaneous	407,242	395,683	397,655
July 14	1,024,534	1,017,394	1,076,372
July 7	850,605	839,085	897,556
June 30	1,003,049	1,021,438	1,065,641
June 23	986,789	1,018,060	1,055,362
June 16	1,003,292	1,016,479	1,036,643
Cumulative total, 28 weeks	26,332,244	27,377,519	27,307,160

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended July 14 totalled 69,047 cars, an increase of 8,887 cars over the previous week and an increase of 5,602 cars over the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
July 14, 1928	69,047	36,331
July 7, 1928	60,160	33,255
June 30, 1928	68,755	37,341
July 16, 1927	63,445	34,869



Cumulative Totals for Canada		
July 14, 1928	1,794,269	1,089,736
July 16, 1927	1,694,122	1,069,645
July 17, 1926	1,604,729	1,041,836

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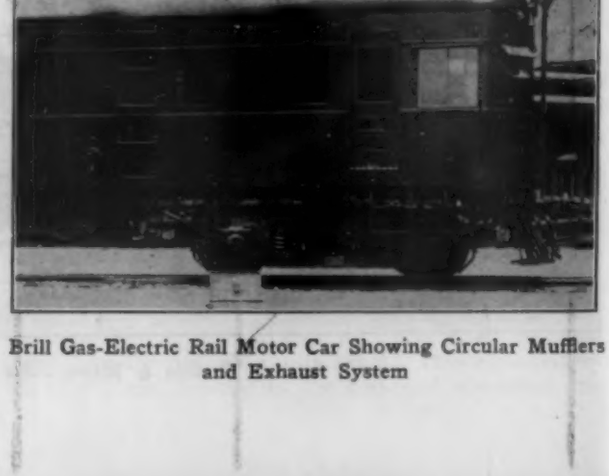


Brill Gas-Electric Rail Motor Car Showing Circular Mufflers and Exhaust System

Michigan Central an Extraordinary Earner

Paid 40 per cent regular and 50 per cent extra dividends in 1927, virtually all out of year's earnings

THE Michigan Central in 1927 paid its regular dividend of 40 per cent on its common stock plus an extra dividend of 50 per cent, without affecting its profit and loss credit balance appreciably. The unusual increase in the earnings of this road has paralleled the equally unusual increase in the activity of the great industry of the territory it serves—that of the manufacture of automotive vehicles, which industry, both in the United States and Canada, is concentrated in territory served by the Michigan Central. Not that this one industry has been directly responsible for the increase in traffic and earnings; but rather that its concentration, combined with its growth, has resulted in an increased demand for all kinds of railroad transportation for this territory. Food supplies, building materials, all kinds of commodities for a doubled population have had to be provided in the space of a few years. Other things being equal, a railroad stands to prosper with the territory it serves, and to this fact no doubt is due in large part the increase of the Michigan Central's dividend from its 4 per cent prior to 1921 to the present favorable basis. The company's corporate surplus at the end of 1927 stood at $88,977,884—a figure which exceeds its capitalization, both stock and funded debt, by $2,693,547. Of the outstanding capital stock, 187,380 shares of a par value of $100 each, 99.19 per cent was held by the New York Central at the end of 1927, sixty-two additional shares having been acquired during the year by the latter company at a price of $1,000 per share.

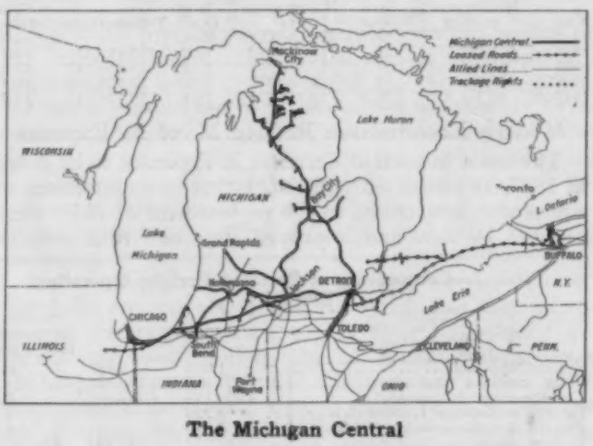
A Carrier of High-Grade Commodities

The Michigan Central is, relatively speaking, primarily a carrier of passengers and high grade freight, rather than of low grade bulk commodities. In 1927 passenger train revenues represented 29.3 per cent of total operating revenues. Of total freight tonnage in that year 35.8 per cent consisted of products of manufactures and l.c.l.

The road is fitted to give excellent and fast service to passengers and freight traffic alike, particularly on its heavy traffic line—that from the Niagara frontier westward through Detroit to Chicago. This line is double tracked throughout, has a minimum of heavy grades and curves and is maintained to a high standard. Automatic train control is in service between Detroit and Chicago and 31 per cent of the route mileage of the entire system is equipped with automatic signals.

The nature of the road's freight traffic and the kind of handling accorded to it is reflected in the average speed of its freight trains, 14.9 m.p.h. in 1927. Revenue per ton-mile, 1.409 cents, also reflects the volume of high-grade commodities handled.

Business in 1927 declined somewhat from that in 1926, the road's peak year from a standpoint of earnings. Operating revenues were $89,750,602 as against



The Michigan Central

$95,524,343 in the preceding year and operating expenses were $62,244,288 as compared with $64,957,364. Net after charges was $16,866,558, a decline of $2,097,341 from the preceding year—still sufficient, however, as noted above, to permit dividends of 90 per cent without material effect on the profit and loss credit balance.

Traffic Uniform

The Michigan Central's freight traffic has been noticeably uniform in the past four years, changes in the percentage relationships of the important items being relatively slight and apparently not indicative of any sharp changes in trends. This is brought out in Table 3, which indicates slight decreases in the relative volume of products of agriculture, of animals and of forests and of slight increases in products of mines and manufactures. The fluctuation of traffic in tons

Table I—Comparative Traffic and Revenue Statistics

Year ended Dec. 31	Mileage	Revenue tons	Revenue ton-miles (thousands)	Average haul	Revenue per ton-mile, cents	Total operating revenues	Total operating expenses	Net operating revenue	Operating ratio	Net after charges
1920.....	1,866	30,203,776	4,824,740	160	1.144	87,790,799	77,140,559	10,650,240	87.87	3,805,785
1921.....	1,862	20,471,263	3,127,686	153	1.462	72,911,852	52,551,945	20,359,908	72.08	7,725,337
1922.....	1,862	25,261,826	3,852,216	152	1.446	83,426,407	59,576,357	23,850,050	71.41	12,818,271
1923.....	1,863	32,323,248	4,863,930	150	1.319	94,798,042	67,639,532	27,158,510	71.35	14,176,448
1924.....	1,862	29,273,172	4,265,934	146	1.370	87,614,662	62,139,524	25,455,138	70.95	13,627,534
1925.....	1,871	33,936,772	4,500,781	139	1.437	91,864,377	61,893,039	29,971,338	67.37	18,806,194
1926.....	1,855	33,181,573	4,527,068	136	1.425	95,524,343	64,957,364	30,566,979	68.00	18,963,899
1927.....	1,858	31,415,851	4,282,486	131	1.409	89,750,602	62,244,288	27,506,314	69.35	16,866,558

handled likewise shows no violent change in the four-year period. Altogether, the table discloses a well-diversified and steady tonnage with a gratifying emphasis on high-grade commodities.

Improved Performance and Service

Table 2 shows the changes in operating performance which occurred between 1924 and 1927—heavier train loading (7.3 per cent) and an increase of 5.7 per cent in gross ton-miles with a decrease of 11.8 per cent in freight train-hours; train speed raised 11.2 per cent to almost 15 m.p.h.; gross ton-miles per train-hour increased almost 20 per cent, and a gain of 11.6 per cent in fuel efficiency.

On the other hand, slight declines will be noted in average car speed, average car loading and net ton-miles per car day. Such figures undoubtedly reflect the improved service the road is giving to its shippers in the matter of car service.

Expenditures for maintenance of way, maintenance of equipment and transportation during the past four years, together with their ratios to operating revenues, were as follows:

Year	Maintenance of Way	% of Oper. Rev.	Maintenance of Equipment	% of Oper. Rev.	Transportation	% of Oper. Rev.
1924	$11,177,679	12.8	$16,457,962	18.8	$30,494,421	34.8
1925	10,415,588	11.3	17,618,141	19.2	29,219,147	31.8
1926	11,528,183	12.1	18,064,540	18.9	29,900,804	31.3
1927	10,344,919	11.5	16,718,888	18.6	29,525,755	32.9

Modern Locomotives Reduce M. of E. Expense

The most important decrease in expenses to be noted in 1927, as compared with 1926, that in maintenance of equipment, is ascribed to the replacement of older locomotives by new and improved ones and to a reduced number of freight cars requiring repairs. Transportation expenses declined somewhat, due to a decrease in traffic, but such savings were, in part, offset by higher wages. The table, shows, however, along with fairly steady outlays on maintenance, a definite declining tendency in the ratio of transportation expenses to operating revenues, reflecting greater efficiency in the handling of the freight business, not counteracted by increased wages. It will be noted (Table 1) that for three years the road has been able to keep its operating ratio safely under 70.

Table 2—Comparison of Selected Freight Operating Statistics

	1927	1924	Per cent of change Inc.	Dec
Mileage operated	1,820	1,827		0.4
Gross ton-miles (thousands)	12,435,692	11,768,557	5.7	
Net ton-miles (thousands)	4,425,794	4,446,442		0.5
Freight train-miles (thousands)	6,724	6,826		1.5
Freight locomotive-miles (thousands)	7,179	7,285		1.5
Freight car-miles (thousands)	364,357	340,944	6.9	
Freight train-hours	450,095	510,548		11.8
Tons of coal consumed by freight locos.	797,367	851,581		6.4
Car-miles per day	29.3	31.1		5.8
Net tons per loaded car	19.9	20.3		2.0
Per cent loaded to total car-miles	61.0	64.3		5.1
Net ton-miles per car day	356	406		12.3
Freight cars per train	55.2	50.9	8.5	
Gross tons per train	1,849	1,724	7.3	
Net tons per train	658	651	1.1	
Train speed, miles per train-hour	14.9	13.4	11.2	
Gross ton-miles per train-hour	27,629	23,051	19.9	
Net ton-miles per train-hour	9,833	8,709	1.4	
Lb. coal per 1,000 gross ton-miles	114	129		11.6
Loco. miles per loco. day	65.6	55.6	18.0	
Per cent freight locos. unserviceable	21.7	16.3	33.1	
Per cent freight cars unserviceable	4.2	5.3		20.8

Net increase in the road's property investment account was $2,859,753 in 1927. In 1924 it was $12,610,269; in 1925, $6,048,908, and in 1926, $8,911,228. Equipment acquired from 1924-27 included 15 Mikado type locomotives, 15 Pacific type, 10 of the 4-6-4 type and 20 eight-wheel switchers; 4,450 freight train cars and 146 passenger train cars. Additions and betterments to roadway and structures have been well distributed over the system—additional enginehouse facilities at one point, a new freight station at another, etc. There have been completed, however, three improvements of major importance; viz. a new classification yard at North Toledo, a new bridge over the Niagara and a modern l.c.l terminal at Detroit. All these expenditures have undoubtedly had a favorable effect on the Michigan Central's operating performance and service. In common with most roads serving territory of comparatively dense population, the Michigan Central has also found it necessary to engage practically all the time in grade crossing elimination projects at various points on its lines.

Table 3—Percentage of Important Commodities and Classes to Total Revenue Tonnage

	1924	1925	1926	1927
Products of Agriculture	9.6	8.4	7.7	8.2
Animals and Products	3.5	2.9	2.7	2.6
Bituminous Coal	23.3	22.4	23.2	24.7
Clay, Gravel, Sand & Stone	15.8	17.1	18.3	17.3
Total, Products of Mines	45.1	45.2	48.2	47.6
Products of Forests	8.2	7.6	6.5	5.8
Bar and Sheet Iron, Structural Iron and Pipe	3.4	4.4	4.2	4.2
Automobiles and Trucks	4.1	4.9	5.1	4.8
Other Manufactures & Misc.	8.3	8.4	8.3	8.9
Total, Products of Mfg. & Misc.	30.6	32.9	32.1	32.9
L.C.L. Freight	3.0	3.0	2.8	2.9

Total Revenue Tonnage, All Traffic, was 29,273,172 in 1924; 31,053,633 in 1925; 33,181,573 in 1926, and 31,415,851 in 1927.

1928 Earnings Holding Up Well

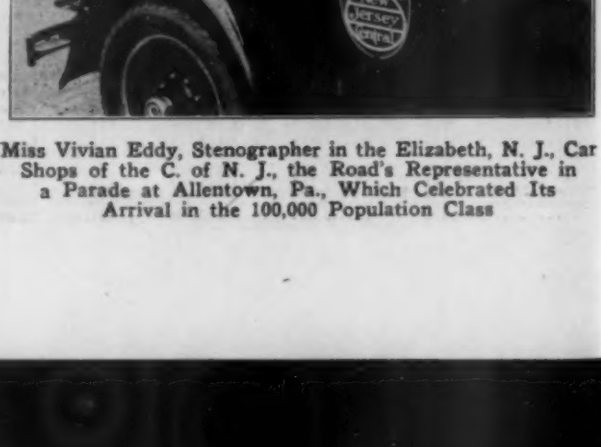
There were no important financial developments during 1927 excepting the maturity of $6,443,624 of equipment trust certificates which was met and the outstanding funded debt reduced by that amount.

During the first five months of 1928 earnings have shown a tendency to increase, net railway operating income being $8,823,717 for the period as compared with $8,515,413 for the same period in 1927.

The application of the New York Central to acquire control of the Michigan Central by lease is still pending before the Interstate Commerce Commission.

THE McCOOK DIVISION of the Chicago, Burlington & Quincy, located in western Nebraska and eastern Colorado, in 1927 for the fourth successive year won first place in safety performance on that railroad. Operating 787 miles of line, which includes two car repair yards and the shops at Denver, the McCook division had reportable injuries of 0.14 per cent or one injury for each 714 men employed.

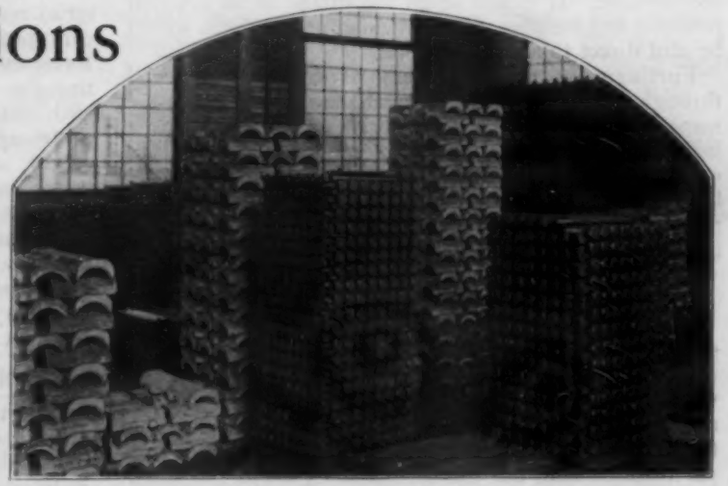
* * *



Miss Vivian Eddy, Stenographer in the Elizabeth, N. J., Car Shops of the C. of N. J., the Road's Representative in a Parade at Allentown, Pa., Which Celebrated Its Arrival in the 100,000 Population Class

Younger Stores Men "Write Up" Supply Conditions

Papers submitted in annual contest conducted by A. R. A. Division VI describe troubles and offer many suggestions—Employee training stressed



THERE is zeal and intelligence among the younger men in railway purchases and stores work and they are thinking, —thinking about their problems and the problems of the railroad and thinking out ways and means of meeting them. This is evident from the papers which have been written during the past six months by junior officers and employees in these departments under the urge of a contest held by the Purchases and Stores division of the American Railway Association.

There were 62 papers entered in this contest from 22 roads as follows: Southern Pacific, 16; Missouri-Kansas-Texas, 7; Northern Pacific, 7; Missouri Pacific, 4; Canadian National, 5; Southern, 3; Union Pacific, 2; Kansas City Southern, 2; and one each from the Chicago, Burlington & Quincy; Chicago, Milwaukee, St. Paul & Pacific; Chicago Great Western; Illinois Central; New York Central; Texas & Pacific; Atlantic Coast Line; Atchison, Topeka & Santa Fe; Bangor & Aroostook; Boston & Maine; Chicago & Eastern Illinois; Fort Worth & Denver; Lehigh Valley and Pennsylvania.

Scrap handling, employee training, delays of material, purchasing, conservation, specifications and co-operation are a few of the subjects discussed in these papers in which 15 storekeepers, 11 clerks, and 12 foremen have presented an interesting record of their viewpoints and also suggestions for improving the supply service.*

The principal aim of the supply service, writes S. A. Hayden, chief clerk to the general storekeeper of the M-K-T, is to provide suitable materials where and when required, at the lowest cost to the property and to store and care for them properly. The railroads have spent huge sums to provide modern store facilities, reclamation plants, shop delivery systems, supply trains, automobile trucks, electric and crane trucks, tractors and trailers, steam and overhead cranes and other devices of proven value. In fact, every known facility encouraging the co-ordination of the department into a composite section for the realization of the most effectual results, is utilized, but despite all this, do we actually accomplish the results expected of the "Service?"

The supply section is extensive, and is probably the one organization in the railroad field dealing directly with every other unit of the railroad. For this reason, if no other, our relations with the other departments must be harmonious. To achieve success we must receive their active co-operation.

No small proportion of the vast material stocks on the railroads today comprises materials purchased for improvement work or for some specific work, which for some reason has been postponed indefinitely or at least not completed until long after the scheduled time. In a large per cent of such cases, the work is deferred or discontinued after materials have been prepared, resulting in large sums of money being tied up in dead stocks, with heavy carrying charges and extra handling expenses.

Unfortunately, the carrying charges on such unused materials are concealed, with the result that they do not receive the consideration which their importance deserves. Notwithstanding the concealed nature, these are actual expenses, because where money is tied up in dead stocks, additional capital must be obtained for use in operating the property. If such charges were allocated to the particular operation for which the material was procured, some mature consideration would be given the "Material Dollar" when programs are re-arranged.

The ideal attainment from the standpoint of "Supply Efficiency" would be the establishment of a dependable budget system for material purchases to function with a budget for improvement or program work, which is formulated before the beginning of each new year and adhered to. If the condition of equipment warrants an expenditure for its improvement at the beginning of the year and the material is purchased for it, why postpone the work indefinitely because the seasonal traffic may demand some other class of equipment? Shop facilities on most roads are adequate to handle more work than is done, and if working budgets are made flexible enough, seasonal requirements can well be taken care of in addition to and at the same time with the regular scheduled projects. Our difficulties do not spring from our form of organization but from the apparent failures of ourselves and others fully to appreciate and utilize, according to its principles, the organization we have.

We must continually and convincingly present to our executives, concludes Mr. Hayden, the possibilities and necessities of our service, expecting the whole-hearted co-operation of all departments and the active assistance and support of our executive officers.

A drawback to stores efficiency, outlines R. G. Becker, division storekeeper, Southern Pacific, is a continual changing of the class of cars from one division to

* The winning papers in the contest were published in the *Railway Age* Daily Edition, of June 23.

another. There are many items carried which cannot always be disposed of when the change is made, for the reason that some of the same class of cars remain on the division. It would be an advantage to all division points if any surplus material which accumulates would be sent direct to a general store.

Furthermore, the movement of company material through the operating department should be done on the same basis as commercial material. Often, there is a lack of service in getting cars moved promptly. In order to give service to the user of material the storekeeper must get service in the transportation of company material. Through it, smaller stock balances can be maintained and the service improved.

Hold Careless Users Accountable

J. H. Sagarsky, chief clerk, Northern Pacific, suggests that a saving would be effected if those actually responsible for ordering the materials and supplies, where any unwarranted surplus is reflected on the monthly stock sheet, were called to account. As it is today, he points out, standard stock items show a proper disbursement but the special stock keeps the stockkeeper between the "devil and the sea."

F. C. Kramp, division storekeeper, Southern Pacific, emphasizes that efficient service and stock control can result only from close supervision and constant study of operation costs by the storekeeper and his assistant. The storekeeper's personal survey and knowledge of division requirements, he writes, are vital to both the general and district storekeeper, reflecting requirements intelligently as to purpose, place and time.

Eliminate the Waste

Efficiency in stores operation will be reflected by the zeal and effectiveness with which waste is eliminated, writes J. G. Glynn, chief clerk, stores department, Canadian National, who also adds, that since no industrial establishment would entertain the idea of an indiscriminate regard for cash or permit it being carelessly held for the sake of convenience, it is just as reasonable that the stores department of a railroad should put its material on a basis of sound protection.

Curb Careless Use

Supervision in the use of material and supplies, points out A. C. Smith, general foreman, Southern Pacific, is very important in the control of waste and should be given the same consideration as the supervision of labor. We cannot expect to get a high degree of service and efficiency out of material and supplies if employees are allowed to use monkey wrenches for hammers, ten-penny nails where eight-penny nails would suffice; two-by-four lumber where two-by-three-inch lumber would do, etc. Nor can we allow the discarding of tools, brooms, carbon paper, etc., before every bit of service had been obtained from them.

Ship Supplies Only When Needed

Material should not be shipped out on a railroad until gangs are working and are ready to use it, is the recommendation of D. M. Horgan, general foreman of stores, Southern Pacific. There is always danger of a job being postponed and the material not used but allowed to lie around and deteriorate. Material for specific jobs should be assembled at division or general stores and held in readiness for quick delivery. If this service is as good as it should be, there will be little trouble in winning the confidence of the using department in such a practice.

Hold Daily Conferences

Much information of value to the storekeeper can be secured by discussing daily with shop foremen the material required as the repair work on locomotives and cars progresses, points out Howard Crouse, general foreman stores, Texas & Pacific, who also maintains, that the storekeeper should know the class of repairs each locomotive in the shop is to receive, since the class of repairs will determine the material to use to a large extent, especially heavy parts, such as boiler tubes, boiler boxes, etc. If this information is always obtained and the material requirements checked according to the class of repairs locomotives are receiving, many delays will be avoided, for the reason that the supply department will have sufficient time to secure the parts necessary to make the repairs before the material is required.

More Scrap Sorting and Reclamation

It is the recommendation of G. W. Lieber, superintendent of reclamation, Missouri-Kansas-Texas, in an unusually well prepared paper on scrap handling, that railroads devote more attention to the preparation of scrap for the market. During recent years, writes Mr. Lieber, the scrap pile has become more attractive through its possibilities for substantial economies in the reclaiming or reconditioning of materials which have become unsuited for further use in their present condition, but which could be repaired in an efficient manner and made to serve a further purpose.

As a further means of reducing their expenses, thereby increasing their earnings, an intensive study has been made of the markets for scrap and the possibilities of reclamation, as a result of which railroad scrap has been removed from a liability to an asset and railroad managements, as a rule, have shown a very decided interest in the economies that are possible from this source.

Ordinarily speaking, scrap consists of material of no great value, having served its original purpose before reaching the scrap classification; however, it represents a greater value in dollars and cents when properly prepared and classified. Few realize the importance of handling properly an article that has been consigned to the scrap pile. It may represent an insignificant sum in actual money, whereas, if properly prepared and classified it will demand a price several times greater. The return to the railroads is increased materially, the employment for labor is increased, increasing home pay rolls and aiding considerably in the local prosperity which ultimately results in increased revenue to the railroads and brings about a better feeling between the railroads and the public.

Equipment is necessary for preparing the scrap economically. Because of the lack of such equipment, many railroads are compelled to dispose of their scrap under a low-priced classification, whereas if better equipment were installed, the scrap could be sold under a higher classification and be paying dividends on the investment. It is quite natural for any buyer of scrap to patronize the railroad that carefully sorts and properly prepares its scrap for the market. He can rely on each shipment being of correct classification and is naturally willing to pay a premium to such a railroad rather than buy at random and prepare it for market in his own yard.

Were I a buyer of scrap, continues Mr. Lieber, I would study carefully the producer's facilities for classifying scrap and offer to the most efficiently equipped

producer a premium for scrap which would be ready for immediate use in mills and furnaces, thereby eliminating the necessity of my unloading, assorting it and reloading it for market.

Reclamation should be encouraged, Mr. Lieber adds. Economy in actual operations should be the first and most essential consideration and should be given thorough study before adopting any reclamation practices. Up-to-date equipment and good mechanics are necessary to promote efficiency. The lack of these has also reflected considerably on reclamation plants. If an article is worth reclaiming, it is worth considering from every angle before the operation is accepted. Consulting committees on reclamation should be organized and meet semi-annually, reviewing present practices, recommending new operations that will reflect actual savings consistent with the service rendered and discouraging practices that are unprofitable. In this manner railroads are assured of reclamation that will render efficient service to the using departments and increase the demand for the products. A concerted effort toward uniform reclamation practices is also highly recommended and will do more than any other one thing to insure results that will justify the continuation and possible extension of this work.

Centralize Surplus

A remedy not fully developed for surpluses of slow-moving standard material, points out R. L. Long, division storekeeper, Northern Pacific, is to carry it at only a few designated points convenient for quick movement to a number of locations. The necessity for carrying protective items is usually obvious but, considering that the money values involved are usually quite large, careful thought to increasing the territory served as far as possible should also result in a considerable saving.

A. F. E. Material

Where material is being ordered for authorized jobs, adds John A. Powers, chief clerk, Southern Pacific, makers of requisitions should specify the date material will be required before submitting the requisitions to the stores department, and the stores department should be furnished with all such requisitions at one time so that the material may be assembled at a centralized point and shipped to the job on the date specified.

More Specifications

Economical purchasing, maintains D. D. Phillips, clerk, Boston & Maine, depends on specifications. The purchase price is only one consideration of many involved in securing ultimate economy. It is a means toward an end, not the end itself.

Great assistance in striking the combination of quality and price required may be obtained by the use of a specification which can analyze beforehand the use to which the material is to be put, the labor involved and other items that can not be considered adequately on the basis of a single purchase with only general ideas and memory as a guide. Through the use of the specification we can defeat the suppliers who would sell us an article which is inferior.

If in the purchase of goods we trust to "brand" names, and buy only the "best," we will probably get a good article at an excessive cost. It is believed by some that if you pay $25 for an article, you will get $25 worth; if you pay $50, you will get $50 worth. This is untrue, since the price of any article includes not only raw material but also the manufacturing costs, sales expense and profit, which vary with every mill. A laboratory operating on the same procedure as the United States Bureau of Standards, recently compared nine different makes of sheeting. The make ranking eighth in quality was second in price, while of two makes identical in quality, one sold for 2½ times as much as the other. A government analysis proved that a paint costing $6 a gallon could be made for $0.87 a gallon.

The opinion held on the relative merits of competing brands by the man who actually uses the material, although always of interest, is hardly an accurate guide to quality, particularly when the difference is only a shade. Though his opinions are usually honest, he may be unconsciously in favor of one particular brand. A company dealing in special steel parts insists that its price is high because the quality of its steel is superior, but careful testing by impartial experts has proved there is nothing to this claim.

An endeavor to obtain high quality by paying high prices makes us the certain target for a multitude of divergent sales arguments, many entirely aside from the point, and many of them absolutely false, until the situation has become so involved and confused that we can hardly hope to purchase a suitable article at a fair price. Once again, we are inviting confusion by failing to describe adequately the article required. An iron mill may urge the necessity of using a high grade of bar iron for use as spring bands, and if we have no standard we cannot know whether the mill is right. If, however, our own experts have given this subject their study, and have issued specifications, their findings, made after intimate contact with actual working conditions, will be far more accurate than the surmise of someone engaged in making iron for the industry in general.

Sales arguments, carefully thought out to convince the customer of the superiority of each particular brand of switch lamps or wire rope or what not, are effectively leveled by specifications which state what may and may not be allowed and which confine sales appeal to prompt deliveries and efficient service. These features are well worth consideration and much more important than the issues actually raised.

We have outgrown the period when weight in pounds or quantity in pieces constitute a fair exchange for a given sum of money. We must know what that weight or those units mean in actual service under usual working conditions. Are we getting a pure linen cloth or is it fifty per cent cotton? Is the gasoline of 62 or 70 deg. under test? Have the forgings a tensile strength of 85,000 lb. or 110,000 lb. per sq. in? Are there just the right amounts of carbon and manganese in the bar steel for the particular purpose? The law protects fully on actual quantity in weight, pieces or volume, but gives almost no protection on quality, which is frequently of greater importance than price per unit.

We can safeguard quality by using the specifications which will insure suitable quality, and put purchases on a straight price basis where they should be, with the proper precautions thus taken. We cannot, however, overestimate the importance of inspecting and testing all materials purchased to specification. Unless we constantly check material received, the way is left open for dishonest manufacturers to gain an advantage by furnishing material not the equal of that called for. This puts a premium on cheating and changes the specification system from a good to an evil one. Specifications are worse than useless without thorough inspection and test.

Specifications do not represent a panacea for all purchasing problems. Some of these they cannot touch. Like other useful devices they have their limitations but within their legitimate fields they do their work that nothing else can do quite as well or efficiently. Specifications and scientific purchasing are bound to become more general as time passes, and the savings thus made will materially aid general railroad prosperity.

Penalize Delinquent Manufacturers

There are three classes of manufacturers which the purchasing agent should avoid, points out G. C. Browne, chief clerk stores, Atchison, Topeka & Santa Fe. They are the manufacturer who is careless about his shipments; the one who is slow in filling orders; and the manufacturer of defective goods. The manufacturer who is continually shipping the wrong material or the wrong size of material or the correct material to the wrong station can cause a great loss to the company in the space of a year, if the purchasing agent continues to patronize him. Every item of material received unfit for use because of negligent loading as well as erroneous shipment involves correspondence, and in addition to this, there is the time lost in waiting for the correct material to be shipped or the cost in making repairs or replacement. If the storekeeper, moreover, cannot depend upon reasonably prompt delivery, it becomes necessary to carry a larger stock to keep from running short, and in cases, it would be better economy to pay more for an article and to have it shipped by passenger train than to wait on slow delivery.

More Standardizing

Why, asks C. E. Berry, assistant district storekeeper, New York Central, should we have a dozen or more different types of shop tools in shops doing the same class of work and working under the same conditions? The principle of standardization can be applied to a great number of items which the railroad companies at present are purchasing and using, which would increase their efficiency and release a considerable amount of money tied up in slow-moving maintenance material.

Co-operation Indispensable

That the need for co-operation is felt in conducting the affairs of the supply department is evident in the large numbers of papers devoted to this subject. Co-operation, writes H. C. Morgan, chief clerk, Southern, in the ordering of material is the first thing that is essential in order to maintain at all times the stock actually required and to prevent the accumulation of surplus material. It is easy for the stores' department to order material, based on past consumption but unless the other departments keep it advised as to changes that are going to be made and as to additional items that will be needed, some items will be ordered and never used. In some instances, equipment will be held until the material is received from the manufacturers.

Study the Man Power

While there is an abundance of thought given to various purchasing and handling material, cautions H. F. Burnett, general foreman stores, Kansas City Southern, we must not lose sight of the fact that our man power is the most important factor to develop. With capable men, consistently picked, trained and stimulated the less important ideas regarding the storing, distribution and even the purchasing of material will work in as a matter of course.

All successful methods of stimulation, moreover, he adds, must operate with the employees' point of view constantly in mind. Employees judge with considerable shrewdness the motives underlying any move and no insincere plan can have any lasting effect. Employees are easily stimulated to better work by example and when little or no attention is given to the appearance of working quarters, there is no natural encouragement for the employees to be neat and careful about their work.

An opportunity for rewarding meritorious work should never be overlooked. It stimulates the recipient to increased effort and encourages others. Too often, promotions go by favor. The result is a marked discontent among the rank and file. The lack of promotion deprives many an organization of the services of men who feel that their ambitions are thwarted.

To this, R. J. Hencken, chief purchasing clerk, Southern Pacific, adds, when a section stockman's mind has been trained to detect waste, waste will gradually be eliminated and management will profit by the outlook of the man handling the material.

Every storekeeper and foreman of stores, continues F. J. Hanlon, storekeeper, Pennsylvania, faces the problem not only of building an organization of workers that will most effectively and most economically carry on the operations, but also of keeping this organization up to pitch if he is to report progress on his daily balance sheet. It should be the responsibility of a storekeeper to select such men with the utmost care, not only considering their present capabilities but future possibilities. Once the new man has been selected and before he is actually put to work he should be made to see his relationship to the organization and be given to understand that he will receive the opportunity to fill more important positions as he prepares himself for them. When he has been assigned to the work, he should be given particular attention and instruction until he thoroughly understands what is expected of him.

Training may be imparted in various ways; by personal contact of the supervisor with the men; by allowing the men to assist those employed in higher positions and by a systematized course of schooling, accomplished by regularly scheduled informal meetings at which topics of general interest are discussed.

Inaugurate Schools

We believe, adds John Drennon, chief clerk to the district storekeeper, Missouri-Kansas-Texas, than an organization on each railroad devoted to the training of prospective executives would be an improvement over the present method of officers personally coaching their immediate subordinates. It is the belief that some capable officer of each road should be assigned the work and every store department employee should be given an opportunity to attend the school.

Less Firing and Better Hiring

The importance of employee training in the stores work is summed up by G. A. Goerner, traveling storekeeper, Chicago, Burlington & Quincy. One of the essentials for the efficient and economical operation of any business, he writes, is a competent and contented organization. Twice our general storehouse burned to the ground, but the work was carried on with remarkably little delay to the using departments because the organization was there with trained men still at the head. The storekeepers, chief clerks and foremen have the direct responsibility of every employee under them. They owe it to their employers to develop the best organization possible and it is their moral duty to subordinates to help train them. Anybody given sufficient authority may discharge employees but it takes a real executive to make a good man out of a makeshift.

Fruits and Vegetables Shipped Long Distances

WASHINGTON, D. C.

THE wide range of distribution of fresh fruits and vegetables produced in the United States and the extremely long hauls necessary for their transportation by railroad to the principal consuming markets are strikingly shown in a bulletin (No. 31) just issued by the Bureau of Railway Economics on a study of the origin and distribution of carlot unloads of 18 fresh fruits and vegetables during 1927 at 66 important markets.

The total domestic rail shipments of these 18 commodities aggregated 906,192 cars, while the number of cars unloaded in the 66 markets amounted to 604,414 cars, or nearly 65 per cent of the total shipments, of which 583,981 cars were domestic products and 20,433 cars were imports.

While the principal producing and shipping areas for many of these commodities are located along the southern and western seaboards, the study shows, the principal markets for fresh fruits and vegetables are concentrated in the territory east of the Mississippi river and north of the Ohio and Potomac rivers. Six leading markets, in order New York, Chicago, Philadelphia, Boston, Detroit and Pittsburgh, alone received more than half of the total rail shipments of these fruits and vegetables consigned to the entire 66 principal markets and as California and Florida led in the shipments of these commodities their location emphasizes the long rail hauls by which they are handled.

The importance of the 66 markets as outlets for rail shipments of fresh fruits and vegetables is indicated by the fact that from 80 to 84 per cent of the total rail shipments of lettuce, grapefruit and celery were unloaded in these markets; from 77 to 80 per cent of the cantaloupes, grapes and melons; from 71 to 74 per cent of the onions, pears, oranges, tomatoes and strawberries; from 61 to 67 per cent of the sweet potatoes, cabbage, plums and prunes; from 50 to 60 per cent of watermelons, white potatoes, peaches and apples.

Influence of Length of Haul

As indicating that length of haul has little influence on the movement of fresh fruits and vegetables charts included in the bulletin show that California, for example, the most distant producing state from each of the five principal markets, furnished 33.1 per cent of the total cars of fresh fruits and vegetables unloaded at New York City in 1927. It also accounted for 29.4 per cent of the unloads at Chicago; 28.7 per cent of those at Philadelphia; 35.7 per cent at Boston, and 27.6 per cent at Detroit.

"This seems to make it clear," the bulletin says, "that transportation costs do not restrict the movement of fresh fruits and vegetables from producing areas to consuming markets." The study also shows that rail shipments of fresh fruits and vegetables have practically doubled in the last ten years.

The extent to which commodities from the more distant points of production compete with those from sources nearer the markets is shown in tables included in the bulletin by such examples as 4,000 carloads of apples from Washington being unloaded in New York as compared with 4,500 from New York state; 529 cars of cabbage from Texas in Chicago in competition with 347 cars from Wisconsin; 38 carloads of strawberries from Missouri at Providence, R. I., in competition with 33 from Maryland and 30 from Delaware, and 901 cars of lettuce at Boston from California in competition with 215 from New York state.

Origin of Loads

Nearly the entire shipment of plums and prunes originated in the Pacific coast states, while nearly 49 per cent of the unloads were in the markets of the New England and Middle Atlantic states, representing a complete cross-country haul. Similar illustrations could be presented for lemons, and to a lesser degree for grapes and pears.

Products from the Pacific coast and Gulf states moved the greatest distances. Nearly 43 per cent of the California carloads of fruits and vegetables traveled over 3,000 miles, nearly 35 per cent traveled between 2,000 and 3,000 miles, while the remaining 22 per cent traveled less than 2,000 miles. About 60 per cent of Washington's products traveled between 2,000 and 3,000 miles. Over 82 per cent of the products from Florida, about 73 per cent from Idaho, over 61 percent from Colorado and over 58 per cent from Texas moved between 1,000 and 2,000 miles. The greater part of the products from Georgia, Minnesota and Maine moved from 500 to 1,000 miles. The bulk of the products from Virginia, Wisconsin and New York traveled less than 500 miles.

Some extracts from the bulletin are as follows:

From a rail-shipping standpoint, white potatoes stand first, apples second, grapes third, oranges fourth, followed in order by lettuce, watermelons, peaches, cab-

Proportion of the Eighteen Fresh Fruits and Vegetables Moving Various Distances to Market from Twelve Leading Producing States—1927

Origin State	California	Washington	Florida	Idaho	Colorado	Texas	Georgia	Minnesota	Maine	Virginia	Wisconsin	New York
Cars Supplied to 66 Markets	183,609	24,846	59,650	14,733	13,494	15,064	21,404	11,165	26,766	27,646	11,338	38,037
Distance traveled:												
Under 500 miles	12.5%	19.1%	1.9%	1.0%	12.7%	13.5%	11.0%	15.5%	28.2%	57.3%	64.4%	87.4%
Between 500 and 1000 miles	2.3	0.1	14.8	17.1	13.8	26.7	78.5	75.8	62.6	38.9	33.0	10.4
Between 1000 and 2000 miles	7.9	18.0	82.3	73.1	61.4	58.4	10.3	8.7	9.0	3.8	2.6	2.2
Between 2000 and 3000 miles	34.8	59.8	0.4	8.8	12.1	1.4	...	...	0.2	...	...	...
Over 3000 miles	42.5	3.0	0.6	...	...	...	...	...	...	...	...	...

Source of Domestic Supply of Eighteen Fresh Fruits and Vegetables Unloaded in the Sixty-six Markets—In Carloads, Year 1927

Origin State	Deciduous Fruits					Citrus Fruits			Berries	Melons		Vegetables							Total eighteen commodities
	Apples	Grapes	Peaches	Pears	Plums & Prunes	Grapefruit	Lemons	Oranges	Strawberries	Cantaloupes	Watermelons	Cabbage	Celery	Lettuce	Onions	White potatoes	Sweet potatoes	Tomatoes	
TOTAL 66 MARKETS	50,736	62,817	22,284	13,669	3,694	15,726	9,955	54,185	12,689	29,279	27,101	23,847	19,229	38,954	24,716	135,206	16,724	23,170	583,981
GROUP I:																			
Maine	197	....	....	....	....	....	....	....	8	....	....	6	....	....	....	26,555	....	....	26,766
New Hampshire	131	....	....	....	....	....	....	....	....	....	....	....	....	....	3	22	....	....	156
Vermont	451	....	....	....	....	....	....	....	....	....	....	....	....	....	2	76	....	....	529
Massachusetts	267	....	....	....	....	....	....	....	81	....	....	....	....	....	1,856	8	....	....	2,212
Rhode Island	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	....	....	5
Connecticut	5	....	7	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	13
New York	8,819	1,673	659	1,337	16	....	....	....	148	....	....	7,255	4,501	3,611	3,138	6,650	....	230	38,037
New Jersey	384	5	798	10	....	....	....	....	78	11	15	60	96	195	282	3,272	1,310	468	6,984
Pennsylvania	1,783	365	348	....	....	....	....	....	4	....	....	291	145	24	25	2,392	....	5	5,382
Delaware	743	28	361	1	....	....	....	....	506	308	40	....	....	....	....	58	1,234	3	3,282
Maryland	767	....	299	3	....	....	....	....	1,029	937	177	221	....	2	3	1,706	1,531	563	7,238
Virginia	3,660	....	352	....	....	....	....	....	877	25	301	2,342	....	52	139	15,296	4,108	294	27,646
West Virginia	1,927	....	139	....	....	....	....	....	....	....	....	26	....	....	....	60	....	23	2,175
GROUP II:																			
North Carolina	3	....	1,592	....	....	....	....	....	1,877	422	801	69	2	368	....	5,233	517	10	10,894
South Carolina	....	....	438	....	....	....	....	....	29	85	2,641	1,363	....	374	10	2,982	119	212	8,253
Georgia	197	....	9,883	3	16	....	....	....	2	83	10,193	43	....	30	....	265	598	91	21,404
Florida	....	8	....	....	....	14,489	....	17,737	650	23	5,591	1,100	6,136	1,021	....	4,411	101	8,383	59,650
Alabama	13	1	15	52	1	....	....	239	703	....	976	1,239	....	....	1	1,721	367	....	5,348
Mississippi	....	....	....	1	....	....	....	6	44	....	15	683	....	....	....	86	54	3,417	4,306
GROUP III:																			
Tennessee	39	....	203	1	....	....	....	....	1,643	39	....	535	....	....	....	215	3,814	1,478	7,967
Kentucky	117	....	45	....	....	....	....	....	703	....	....	24	....	....	129	615	238	4	1,875
Ohio	511	3	170	47	4	....	....	....	2	....	....	585	35	63	2,694	213	....	614	4,941
Michigan	1,271	1,430	238	242	36	....	....	....	100	68	....	254	1,909	....	1,475	5,869	....	122	13,014
Indiana	243	....	210	24	....	....	....	....	50	324	36	11	....	....	3,481	78	302	420	5,179
Illinois	1,968	10	1,161	62	....	....	....	....	96	17	9	113	....	....	233	33	115	178	3,995
Wisconsin	246	....	....	....	....	....	....	....	36	....	....	1,748	....	....	182	9,126	....	....	11,338
GROUP IV:																			
Minnesota	9	....	....	....	....	....	....	....	....	....	....	402	6	6	663	10,079	....	....	11,165
North Dakota	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7	1,807	....	....	1,814
South Dakota	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	494	....	....	495
Iowa	66	66	....	2	....	....	....	....	40	12	9	248	....	....	880	40	10	2	1,375
Nebraska	97	16	....	1	....	....	....	....	....	....	....	....	....	....	....	1,764	....	....	1,878
Missouri	552	40	11	8	....	....	....	....	1,095	....	300	43	....	....	5	826	39	247	3,166
Kansas	438	34	....	19	....	....	....	....	24	....	25	33	....	....	10	1,534	53	14	2,184
Arkansas	184	35	904	1	....	....	....	....	1,201	500	134	64	....	....	10	399	399	115	3,946
Oklahoma	8	2	67	....	....	....	....	....	14	13	248	6	....	....	2	1,200	155	6	1,721
Louisiana	....	....	....	....	....	....	....	138	1,349	6	54	506	....	2	228	953	570	4	3,810
Texas	4	14	23	132	....	468	....	20	83	148	2,391	3,564	1	123	3,427	1,869	287	2,510	15,064
GROUP V:																			
Montana	78	....	....	....	....	....	....	....	6	....	....	....	....	2	....	280	....	....	366
Wyoming	....	....	....	....	....	....	....	....	....	....	....	1	....	57	1	341	....	....	400
Colorado	866	....	849	397	....	....	....	....	....	3,134	15	170	124	2,264	668	4,985	....	2	13,494
Utah	285	3	339	22	4	....	....	....	....	1	4	32	14	1	306	238	....	176	1,425
New Mexico	158	....	....	9	....	....	....	....	....	313	....	67	....	46	7	4	48	13	665
Arizona	....	47	....	....	1	137	....	18	....	3,991	30	19	....	6,678	2	....	....	....	10,923
GROUP VI:																			
Idaho	3,782	5	9	5	1,010	....	....	....	....	....	1	1	26	118	398	9,378	....	....	14,733
Washington	15,832	87	169	1,633	183	....	....	....	21	164	73	45	12	967	718	4,880	....	62	24,846
Oregon	1,788	4	4	2,248	325	....	....	....	19	3	....	44	322	11	367	791	....	14	5,940
California	2,598	58,894	2,921	7,395	2,089	585	9,930	35,955	128	18,481	2,950	307	5,831	22,827	3,111	5,572	694	3,341	183,609
Nevada	....	....	....	....	....	....	....	....	....	80	8	....	....	4	17	223	....	4	335
UNKNOWN	249	47	70	13	9	47	25	52	43	71	63	127	69	108	236	603	61	145	2,038

bage, cantaloupes and onions. But from the standpoint of unloads in the 66 markets the order is somewhat different. White potatoes take the lead, nearly one-fourth of the unloads in these markets being of this product. Next in line is grapes, followed by oranges, apples, lettuce, cantaloupes, watermelons, onions, cabbage and tomatoes. These ten commodities represent over 80 per cent of the combined unloads.

Sources of the Traffic

Unloads of the 18 domestic fresh fruits and vegetables in the 66 markets amounted to 583,981 cars in 1927; of this total, California supplied 183,609 cars, or 31.4 per cent; Florida supplied 10.2 per cent; New York State, 6.5 per cent; Virginia, 4.7 per cent; Maine, 4.6 per cent; Washington, 4.3 per cent; Georgia, 3.7 per cent, and Texas, 2.6 per cent. Idaho, Colorado, and Michigan each supplied from 2.2 to 2.5 per cent; Wisconsin, Minnesota, Arizona and North Carolina each supplied about 2 per cent, while the remaining 33 states supplied from less than one-hundredth of 1 per cent to 1½ per cent each.

In the case of grapes, for example, 94 per cent came from California. That state also supplied 54 per cent of the pears; 57 per cent of the plums and prunes; 100 per cent of the lemons; 66 per cent of the oranges; 63 per cent of the cantaloupes, and 59 per cent of the lettuce. Florida was the principal source of supply for grapefruit, celery and tomatoes, furnishing respectively 92 per cent, 32 per cent, and 36 per cent of the total unloads of those commodities. Georgia was the principal source of supply of two commodities, supplying 44 per cent of the peaches and 38 per cent of the watermelons. Washington was the largest source of supply for apples; North Carolina for strawberries; New York for cabbage; Indiana for onions; Maine for white potatoes, and Virginia for sweet potatoes.

New York the Largest Market

Considering the 18 products combined, New York City was the largest receiving market. The aggregate unloads in New York amounted to 125,411 cars, or about 22 per cent of the total for the 66 markets as a whole. Chicago was second, receiving 63,669 cars; Philadelphia, third, with 35,051 cars; Boston, fourth, with 33,211 cars; Detroit, fifth, with 22,247 cars, and Pittsburgh, sixth, with 21,248 cars. More than half the total unloads in the 66 markets were received by these six cities.

New York City was also the principal market for each of the 18 products, considered separately, Chicago was second in all products except cabbage, Philadelphia ranking second for that commodity.

New York City's percentage of the domestic unloads of pears in the 66 markets was 44 per cent; grapes, 29 per cent; plums and prunes, 28 per cent; apples and cantaloupes, 25 per cent; tomatoes, 24 per cent; lettuce, 23 per cent; oranges, celery and onions, 22 per cent; peaches, 21 per cent; grapefruit, 20 per cent. In the case of the other commodities, the New York proportion ranged between 10 and 20 per cent.

Cleveland, for example, drew from 45 different states, Chicago, 43 states; Milwaukee from 42; New York, Detroit and St. Louis from 41; Boston, Jacksonville and Indianapolis from 40; Louisville, Cincinnati and Minneapolis from 39; Birmingham, Toledo and New Orleans from 38 states. The remaining 51 markets received their supply from 10 to 37 states.

California, Texas and Arizona served all of the 66 markets with one or more of the 18 products. Washington, Oregon, Idaho, Arkansas, Colorado, Louisiana and Florida supplied from 60 to 65 markets each. Fourteen states furnished unloads for between 50 and 58 markets. Nine states supplied from 40 to 48 markets, and the other 15 states unloaded some commodities in from 2 to 38 markets. California grapes, cantaloupes and lettuce were unloaded in all of the 66 markets. Its oranges, celery and onions went to 64 markets, and its lemons to 63 markets. Arizone lettuce was unloaded at 65 markets, and its cantaloupes were supplied to 62. Washington apples went to 65 markets, its pears to 51, its lettuce to 46, and its onions to 43.

Onions from Texas reached 63 markets, tomatoes 62 and cabbage 61. Colorado lettuce was unloaded at 59 markets, while its cantaloupes went to 54.

Florida furnished 63 markets with grapefruit, 58 with oranges, 56 with tomatoes and 55 with celery. Virginia white potatoes went to 50 markets, and its sweet potatoes, apples and cabbage to 45 markets. Other states supplied varying numbers of the commodities to between 30 and 40 markets.

Length of Rail Hauls

The predominance of long hauls of fruits and vegetables from producer to consumer is well illustrated by the accompanying table. The table distributes, according to distance groupings, the 18 fresh fruits and vegetables supplied by the leading producing states in 1927 to the 66 markets.

The states are arranged from left to right according to the proponderance of long hauls.

The mileages on which the compilations are based were taken from the table of official distances published by the United States War Department.

The unloads of the 18 commodities arranged by source of domestic supply are given in an accompanying table.

THE LEIPZIG FAIR, at which it is expected that there will be an international exhibit of approximately 10,000 modern industrial products, will be held this fall from August 26 to September 1. About 100 special exposition buildings are used for these displays.

* * *

Locomotive Equipped for Sending and Receiving Radio Messages

McManamy Criticizes Private Car Practices

Commissioner finds illegality in transportation of cars for other roads

WASHINGTON, D. C.

PRACTICES in connection with the use of railroad-owned private or office cars for other than strictly railroad purposes, including trips to resorts of amusement and recreation with families, relatives, friends and guests of railroad officials (not overlooking their valets and maids) are criticized in a proposed report by Commissioner Frank McManamy of the results of an investigation instituted by the Interstate Commerce Commission, made public on July 23.

Commission McManamy recommends findings by the commission that the transportation or movement of private passenger cars, including so-called office cars, by one carrier for another, free or at other than published tariff rates, is contrary to the provisions of the interstate commerce act and that it is unjustly discriminatory and unduly preferential and prejudicial to haul such private cars of other carriers free or at less than published tariff rates, while charging certain minimum fares and revenue for the movement of privately-owned or chartered cars. He also recommends a finding that the transportation of persons in private passenger cars, including berth and meals, at the rate charged passengers provided only with ordinary coach accommodations, is unjustly discriminatory and unduly preferential and prejudicial. An accompanying note says the investigation has been conducted almost wholly by questionnaire and that a proposed report was not contemplated, but in view of the character and volume of the information which has been submitted and the possibility of minor errors having crept in, it has been deemed advisable to make it public in the form of a proposed report, thus affording opportunity for interested parties to make corrections. Sixty days will be allowed for filing exceptions and oral argument on questions of law may be granted if requested in the exceptions.

"The assessment of a just and reasonable charge by carriers transporting private cars for others, and for services rendered in connection therewith", Commissioner McManamy says, "is not only required by the act, but will be in keeping with efficient and economical management", and he quotes from Supreme Court opinions that one of the fundamental purposes of the act is "to compel the carriers as a public agent to give equal terms to all" and "to cut up by the roots every form of discrimination, favoritism, and inequality."

"The carriers should be required to cease and desist from the violations of the act herein found", he says, "but in view of the penalties provided for such violations, no order appears to be necessary."

A questionnaire was sent to all Class I and II carriers, and to switching and terminal companies, calling for information as to the private passenger-train cars owned, leased, or operated, the movement or use of such cars as were transported free or at less than tariff rates on home and foreign lines, and the occupants of such cars on respective trips. Returns were filed, under oath, by 387 carriers, covering the calendar years 1923, 1924 and 1925. An appedix given with the report covers the movement of approximately 900 private cars during the three years, which made 56,649 trips, with 127,461 occupants, as home cars on home railroads. Of the occupants, 122,557 held passes and 4,904 held tickets. There were also 11,269, trips of home cars on home and foreign railroads, with 28,567 occupants, and 28,724 trips with 61,083 occupants, of foreign cars on home railroads. The cost of commissary and other supply items furnished while on own line is given as $11,532 "absorbed by our line" and $66,717 "absorbed by occupant or foreign railroad."

Other tabulations given as appendices show the mileage of private cars on the lines of individual roads, the movement of private cars occupied by directors of the Pennsylvania, the movement of private cars occupied by the vice-president of "one of the eastern carriers", a statement covering private cars of the New York, Chicago & St. Louis, a statement showing movement of Louisiana & Pacific private cars over the Union Pacific, a statement showing the movement of Nevada Northern private cars on the Western Pacific, Southern Pacific and Union Pacific, and a statement showing movement of Pullman cars.

"Of course," Commissioner McManamy says, "a carrier may transport its own property without the payment of tariff charges. It would serve no useful purpose to require a carrier to transfer money from one pocket to another in payment of charges". However, he adds that "the transportation of a private car of another carrier is ordinarily for the benefit of the owning line or its officials and not for revenue purposes", and that: "Reciprocity between carriers is no justification for the free transportation of private cars. It will be observed that railway equipment generally which is not in revenue service is not handled on that principle, and it could not be so handled lawfully. Moreover, the returns to our questionnaire show that there is seldom a fair balance between the service performed by different carriers in transporting the private cars of each other. On the contrary, the returns show that there is often a wide difference in the relative amount of service performed in hauling such cars."

Extracts from the report are as follows:

The returns show that a substantial portion of the total mileage of private passenger-train cars, including so-called office cars, herein referred to collectively as private cars, was on the lines of carriers other than those owning the cars. The private cars thus moved over foreign lines were transported without charge. In other words, a pass was issued covering transportation of the private cars in a manner similar to that issued for the transportation of certain classes of persons as provided for in sections 1 and 22 of the act.

Cars Used by Other Than Railway Men

The returns to the questionnaire show that the occupants of private cars are not restricted to officials and employees of the carriers but include in a large number of cases the families,

River & Northwestern Railway in Alaska. Officers and directors of the Nevada Northern are officers or directors in one or more of the related corporations, namely:

Copper River & Northwestern Railway
Nevada Consolidated Copper Company
Utah Copper Company
Kennecott Copper Corporation.

The reply received from the Nevada Northern states that the road owns two private cars; one, the N. N. No. 101, has headquarters on the line at East Ely, Nev., while the other car, N. N. No. 100, is identified in the returns as follows: "Note: Home station of Nevada Northern 100 is Jersey City, N. J. (Erie Railroad)." An explanatory note on the return states: "Car 100 owned by Copper River & Northwestern Railway." The markings of this car were apparently changed from Nevada Northern to Copper River & Northwestern as C. R. & N. W. car No. 100 appears throughout the records. This car was used extensively by the president of the Nevada Northern and by the president and vice-president of the Copper River & Northwestern. A third car which was moved extensively on the account of the Nevada Northern is the car "Cyprus," which, according to the return, is owned by a vice-president of that railway. The extent of the travel of cars on Nevada Northern account is shown in Appendix G.

The return shows that in most instances the owner of the "Cyprus" traveled as vice-president of the Nevada Northern, but at other times he traveled as an official of the Bingham & Garfield. The return of the Ray & Gila Valley referring to movements of the same official's car "Cyprus" stated: "We have kept on record of the movements of * * * car on own line and were, therefore, delayed since receipt of your second request in searching out the dates of his semi-annual visits to the property in Arizona." This return also showed with respect to occupation that the official referred to "is the president and active executive in charge of operations of the Jackling-Hayden, Stone group of copper mines and subsidiary railways."

From the information contained in the returns it seems apparent that the spirit and intent of the Commission's conference ruling No. 208 (a) is not being observed in the issuance of passes. This ruling is in part as follows:

> The provisions of the act relative to the issuance of free tickets, free passes, free transportation, or free carriage to employes of carriers apply only to persons who are actually in the service of the carriers and who devote substantially all of their time to the work or business of such carriers.

Deadhead Mileage

The returns show that a substantial portion of the total mileage of private cars, especially on foreign lines, was what is commonly referred to as "deadhead" mileage, that is, the cars were not occupied, except in some instances by an attendant. The purpose of such movements is to return the cars to their home stations or to move them to stations where they are to be occupied. On the Baltimore & Ohio and the Michigan Central approximately 3 per cent of the total mileage of foreign private cars was deadhead. On the Cleveland, Cincinnati, Chicago & St. Louis the percentage was 4, on the Atchison, Topeka & Santa Fe it was 5, on the Boston & Maine over 9, on the New York Central over 11, on the Richmond, Fredericksburg & Potomac over 12, and on the Atlantic Coast Line over 16.

The returns show numerous instances where private cars were deadheaded to and from off-line shops without charge. Also worthy of consideration is the matter of free switching service and free storage for private cars. A large number of the private cars covered by the returns are held at off-line stations when not in use. Many are so held at New York and the returns indicate that the matter of storage and switching of these cars is of considerable importance from the standpoint of operating expenditures.

In numerous cases cars were rented from the Pullman Company by officers of carriers. Such cars were moved without charge by the carriers. The movements of Pullman private cars occupied by railway officials and others over the Union Pacific and New York Central are summarized in Appendix H.

Numerous instances are shown where private cars of the carriers were loaned to officers of other carriers. As an illustration, Missouri Pacific car No. 1 was loaned on May 15, 1925, to the chairman of the board of the Manufacturers Railway for a trip from St. Louis, Mo. to Louisville. The returns show that this official used a pass and that he was accompanied by seven persons who held tickets. Union Pacific car No. 101 was used for a trip from New York to Colorado Springs, Colo., during July and August, 1923, and was occupied by the widow and daughter of a former director, holding passes, and by five other persons holding tickets.

Cars of Private Ownership

Many private cars which were transported free, or at less than tariff rates, are of private ownership as distinguished from carrier ownership. For example, Union Pacific car No. 1900 is owned by the widow of a former chairman of the board of one of the western carriers. Attention is called to the movement of this car during the period from July 16 to September 5, 1923, as indicated below:

7-16-23	Ogden, Utah, to Oakland Pier, Calif.
7-16-23	Oakland to San Francisco, Calif.—Deadhead
7-17-23	San Francisco to Santa Barbara, Calif.
7-30-23	Santa Barbara to Los Angeles, Calif.—Deadhead
7-31-23	Los Angeles to Santa Barbara, Calif.—Deadhead
8-14-23	Santa Barbara to Los Angeles, Calif.
8-15-23	Los Angeles to Santa Barbara, Calif.
8-29-23	Santa Barbara to Los Angeles, Calif.
8-29-23	Los Angeles to Santa Barbara, Calif.—Deadhead
9- 1-23	Santa Barbara to San Francisco, Calif.
9- 1-23	San Francisco to Oakland Pier, Calif.—Deadhead
9- 5-23	Oakland Pier, Calif., to Ogden, Utah.

The private cars of railroad officials are intended to be offices on wheels for those whose duties require considerable travel over the line and when used for that purpose are an important facility for carrying on the business of the road. It is seldom, however, that these duties necessitate a movement of the car over other lines. In some cases such a movement may be justified for business reasons; for example, where it avoids a very circuitous haul over the home line. But the returns to our questionnaire indicate that private cars are often used for other than business purposes by railroad officers, their relatives, and friends. Moreover, they appear to be used in some instances for the benefit of an industry which controls the railroad. In other instances, their use in entertaining shippers may be for the railroad, but this is a practice of doubtful propriety. These and other abuses are apparent from the returns, but we are here concerned primarily with the legality of the free transportation of the private cars of other carriers.

Legal Practice Involved

Then follows a discussion of the legal questions involved, in the course of which the report says:

The fact that the practice of transporting or moving the private cars of other carriers free may have existed for some time can not be urged as legalizing it. See *American Express Co.* v. *United States, supra.* This is the first time that the extent of the practice has been brought to our attention officially and a ruling called for as to its legality. It is true that our conference ruling No. 95 and also our pass regulations effective January 1, 1917, provide forms for passes which include "car" as well as persons. This, however, refers to movements over the home or owning line. Any other interpretation would conflict with the law we administer. While good faith might be urged in defense of a past violation, obviously it could not be so urged in respect of a violation after the law has been construed by the commission.

Coach Ticket Holders Hauled in Private Cars

As shown in Appendix A, a substantial percentage of the occupants of private cars hauled free, or at less than tariff rates, were business associates, relatives, or friends holding tickets which entitled them only to transportation in the ordinary coach. A total of 220,391 passenger miles were traveled by such persons in the private cars of the New York, Chicago & St. Louis, and a total of 208,203 passenger miles were traveled by such persons in private cars of the Chicago, Rock Island & Pacific during the three-year period. The returns of other carriers show similar travel.

Carriers according passengers the comforts and facilities of private cars, including meals and berth, are treating unequally and unfairly the passengers accorded the ordinary coach facilities but who are charged at the same rate as those traveling in private cars, and they also discriminate against those who pay the surcharge for riding in ordinary sleeping or parlor cars and privately-owned or chartered cars.

EMPLOYEES OF THE NORTHERN DIVISION of the St. Louis-San Francisco established a system record during March when no reportable injuries occurred among the 800 employees of that division. Casualties on the system decreased 19.8 per cent during the first four months of 1928 as compared with a corresponding period of last year and 31.6 per cent during April, 1928, as compared with April, 1927.

The Stockholders' Decreasing Share in Gross Earnings*

Railroads paying only 51 per cent of available funds as dividends—New investment criterion suggested for savings banks

By John W. Stedman
Vice President in Charge of Investments, the Prudential Insurance Company

IN a review of a summary of the statutes governing the investment in railroad and public utility bonds by Mutual savings banks of some of the states in which such funds had grown to vast proportions, I was struck by the similarity of the financial standards set up to test the soundness and safety of the investment.

Gross Revenues No Longer Best Guide

In respect to the railroad requirements, I am at a loss to understand why such relics of the decade before the War have not been modernized to meet the greatly changed economic and political conditions obtaining since the emergence of the railroads from a government control under the Transportation Act. Let us consider, first, the criterion that the gross revenues from the operation of controlled, owned and leased lines, plus income received from the sale of coal from owned and controlled mines, must have at least equalled in each of the five years in the New York statute, and each of ten years in the Massachusetts statute, an amount five times annual interest charges and rentals. When this provision, which today is antiquated and obsolete, was originally adopted it was thought that, because the railroad methods and practices of accounting were then often irregular and without uniformity, any index based upon the income available for the payment of fixed charges would be unreliable. In plain language, as the integrity of "gross income," which, in the terminology of the Interstate Commerce Commission today, is the sum of "net railway operating income" and income from investments and other sources, was open to question, fifteen to twenty years ago, "gross revenues" offered the truer and more dependable numerator.

If we go back to 1915, when the dollar had lost only a small fraction of its purchasing power, we find that the gross income of all the Class 1 railroads of the United States amounted to about 30 per cent of gross revenues, and that fixed charges amounted to about 19 per cent; in other words, the five to one ratio was substantiated, yet interest and rentals were earned about 1.6 times. How do these figures compare with the results of 1925? (I have chosen to contrast 1915 and 1925 because 1916 and 1926 were both years of somewhat heavier than normal traffic.) In 1925 gross income had shrunk to about 23 per cent of gross revenues, while fixed charges consumed only 11½ per cent of gross revenues; in other words, though interest and rentals were two times earned, the old five to one ratio was widened to almost nine to one. It would therefore seem that it has long since outlived its usefulness and should be discarded.

Before, however, suggesting what new standards should be substituted in its stead, I want to turn to an exposition of the factors which have brought about this great change from five to one to nine to one in the relation of gross revenue to fixed charges. In the ten and one-half years dating from June 30, 1915, while gross revenues increased $3,342,000,000, or 113 per cent, net railway operating income increased $440,000,000, or only 65 per cent, thus proportionately decreasing from nearly 24 per cent of gross to a little over 18 per cent. This was caused very largely—I shall omit passenger, express and demurrage statistics—by an increase in freight traffic measured by tons carried one mile of 51 per cent, by an increase in the ton-mile rate of 52 per cent, and by an increase in the distance hauled of about 10 per cent. The disproportionate increase in net earnings was due, of course, to the very great advance in wages and in the cost of fuel and material, indicated by an increase in operating expenses of 108 per cent, and also to a particularly discouraging increase in taxes of 168 per cent. How crushing this burden has become may be vividly realized when I tell you that the railroads pay $42,000 in taxes every hour ticked by the clock!

I have directed your attention to the proportionate decrease in fixed charges, which resulted in the favorable change in their relation to gross income from 1.6 times earned to twice earned. What brought this about in the face of a 110 per cent increase in average wages and a 70 per cent increase in the cost of fuel and materials? Three things: First, the intensified use of the railroad plant made possible by judicious capital outlay for additions and improvements. This may be measured by the 44 per cent increase in the density of freight traffic from 1,200,000 in the fiscal year ended June 30, 1915, to 1,725,000 in 1925 ton miles per mile of road; second, efficiency of management, as reflected in economy of operation, amounting in the year 1925 to about $800,000,000, or 13 per cent of gross revenues (this is an estimate and probably an underestimate); and, third, the fact that the old bonded debt and the capitalized value of rentals of 100-cent dollers outstanding in 1915 was increased only about 10 per cent in 60-cent dollars. You will readily comprehend that had a very substantial increase in debt been incurred in depreciated money the margin over the earning power of the total borrowed capital and the interest charge would have been narrowed to such an extent as to have offset the gains won from intensive use and efficiency of management.

56 Per Cent of Improvements Paid for Out of Earnings

When we consider that in this 10½-year period the book value of the investment in "road and equipment" increased approximately 5¼ billion dollars and that the net increase after deducting $1,150,000,000 depreciation accrued out of earnings was $4,100,000,000, it becomes a matter of great interest to know how this huge sum was financed. Disregarding all inter-company investments and leases, all refunding operations and any

* Address delivered before National Association of Mutual Savings Banks at the Eighth Annual Conference, Swampscott, Mass., June 13, 1928.

stock dividends, the figures work out as follows: About $1,100,000,000 was raised from the sale of bonds, $700,000,000 from the sale of stock, and $2,300,000,000 was appropriated from income. The fact that only 27 per cent of the net cost of additions and betterments was derived from the proceeds of bonds is a further explanation of the proportionate decline in fixed charges. The issuance for cash of stock amounting to only 17 per cent of the net cost of additions and betterments reveals the degree of impairment of railroad credit, while the flowing back into the property of earnings amounting to over 56 per cent of the net cost of additions and betterments bears emphatic testimony to the prudent and conservative character—except in a very few instances—of the financial direction of the carriers. The stockholders have stood in the breach and borne the brunt of the siege, while we bondholders in the inner citadel have come through with comparatively few casualties—and a veritable siege it was, lasting for eight years from the date when Uncle Sam joined the Allies.

There have been since the passage of the Transportation Act, influences which, while they affected the financial policy of some of the stronger systems during adversity, remained latent insofar as the average figures were concerned, and did not begin to have an effect upon railroad financing as a whole until after credit had been reestablished and confidence revived in 1924. I refer particularly to the Interstate Commerce Commission's interpretation of the rate-making provision of the Transportation Act, together with the Recapture Clause. The Interstate Commerce Commission having first determined upon a tentative and presumably minimum theoretical valuation of the railroad plant of nearly $19,000,000,000, instead of specifying that the full 6 per cent return permitted by the act should be the basis for the adjustment of rates to adequate levels, fixed, in March, 1922, only 5¾ per cent, and simultaneously decreed a horizontal reduction in rates. Since then a repressive policy of steadily whittling down a multitude of individual rates has been pursued. This attitude, combined with high operating costs, brought about the following disappointing results for the carriers: a return on the depreciated value of their invested capital of 3.3 per cent in 1921, 4 per cent in 1922, 4.9 per cent in 1923, 4.8 per cent in 1924, 5.4 per cent in 1925 and 5.7 per cent in 1926.

A Concrete Suggestion for Tax Reduction

Is it to be wondered at that railroad management chose to be conservative and to decline to raise new partnership capital until bonds could be sold on a basis which would leave some margin for the payment of dividends at the higher rates necessary to attract investors? Then, too, such a discouragingly large part of the capital raised was required for unproductive purposes, such as passenger terminals for the convenience of a dwindling or an unremunerative commutation traffic, the elimination of street and highway crossings at grade, costly experimentation in safety devices, etc., that this cheese-paring quality of regulation made officers and directors reluctant to put out additional stock in any large quantity. Another deterrent to equity financing is clearly and concisely discussed by Frederick Strauss in his article entitled "The Railroads" which appeared in the March number of the Century Magazine. "Interest in bonds," writes Mr. Strauss, "is deductible from profits in determining what constitutes non-taxable income subject to the present corporation tax. It is unfortunate that the government holds out to the carriers, already heavily bonded, the temptation to make a saving in annual taxes by further increasing fixed charges." If the government is empowered to fix the valuation of the railroad's plant and also to restrict the rate of return thereon to a moderate figure considerably below that earned in unregulated industry, I submit, with Mr. Strauss, that the federal corporation tax should be reduced. My concrete suggestion would be an abatement of 40 per cent, or the difference between a 10 per cent and a 6 per cent return on capital.

From the standpoint of the holders of bonds of many railroads of varying credit, our advocacy in 1920 of the recapture clause, which as the concomitant of the rate-making provision was to my mind the only solution of a perplexing problem, I always believed was reasonable and timely. Then it seemed to many of us professional investors of collective capital that without the right to recapture earnings over 6 per cent the alternatives were either moderate prosperity for the minority and bankruptcy for the majority of the carriers, involving serious investment loss, or moderate prosperity for the majority and such extreme affluence for the minority of carriers that political agitation would soon compel even more drastic regulation.

In retrospect I have come to the conclusion that it was the provision that the excess income of any individual railroad might be impounded to its credit in a reserve fund from which any deficiencies in earnings to cover interest and dividend requirements might be met that had quieted any doubt lurking in our minds and blinded us to the future possibilities of hardship to stockholders and of unsound curtailment of the capital base. This capital base must be a broad one if we investors in railroad obligations are to feel safe; and when money rates are high it cannot be broadened in justice to existing stockholders without diminishing the margin of profit for all stockholders to almost the vanishing point.

Variation from year to year in volume and character of traffic, in length of haul, and in the cost of fuel and labor, produce fluctuations in net income, but the charge for services cannot be changed from year to year without upsetting all other industries. If it is only fair to general business to keep these charges stable, it is equally only fair to the railroads to stabilize their margin of profit.

Recapture Should Be on 5-Year Basis

When the value of railroad property has been with reasonable definiteness ascertained, after, and not until the Supreme Court has prescribed the proper methods and standards of valuation, the Interstate Commerce Commission, in regulating freight rates, is going to be guided, I presume in the absence of pronounced trends, by five-year averages of receipts and expenses. If a similar principle should be applied to recapture, then only the average excess income of a five-year period instead of the total excess income would be taken away to be shared between the government and the individual railroad's reserve fund. This would allow the deficiencies of lean years to be counterbalanced by the surplus of prosperous years, and would warrant the management in incurring the hazards of experimentation which make for development and progress.

Present Investment Bank Standards

After this survey of events and conditions—economic, legislative, regulative and financial—which have affected railroad credit, let us return to the consideration of how to devise a new yardstick for measuring the investment value of bonds. In this connection the further require-

ment that savings banks may purchase the mortgage obligations of only those railroad companies which have, as stipulated in the New York statute, earned or paid 4 per cent dividends in each year for five years, or which have, as prescribed in the New Jersey statute, simply paid 4 per cent dividends regularly for five years, or which have, as set forth in the Massachusetts and Connecticut statutes, paid 4 per cent dividends in each year for ten years, provided that during these periods the outstanding capital stock must have been equal to at least one-third of the mortgage debt, or only one-fourth of the total capitalization, seems to me to lack those qualities essential to the process of winnowing the wheat from the chaff. We have only to construct the simplest of hypothetical cases to realize the futility of such criteria.

Suppose the A. B. C. Railroad, with $2,000,000 of 5 per cent bonds and $1,000,000 stock outstanding, to have earned $140,000 in each of the past five years, and to have paid annually 4 per cent dividends; the interest charges of $100,000 would have been covered only 1 2/5 times, and after the payment of dividends no surplus, that greatest of all elements in the creation of credit, because it connotes prudence in management, would have been left. On the other hand, suppose the X. Y. Z. Railroad, with $2,000,000 of 4½ per cent bonds and $2,000,000 stock outstanding, to have earned $180,000 in each of the past five years, and to have paid annually only 3½ per cent dividends; interest charges of $90,000 would have been covered twice, and, after the payment of dividends, $20,000, or over 22 per cent of the distributable income, would have been carried to surplus. Obviously, there can be no question that the bonds of the latter carrier constitute an investment far superior to the bonds of the former, and that the rate of dividend and relation of stock to bonds are meaningless and superficial gauges of investment worth.

Railroads Approved as Investments Paid in Dividends Only 51 Per Cent of Available Funds

A review of the income accounts of all Class 1 railroads in the five-year period from 1922 to 1926, inclusive, reveals the fact that interest and rentals were earned, on the average, 1.9 times. In this same period fixed charges of 32 roads, selected because the bonds of one or more issues of which are now legal for New York savings banks, were earned, on the average, 2.2 times.

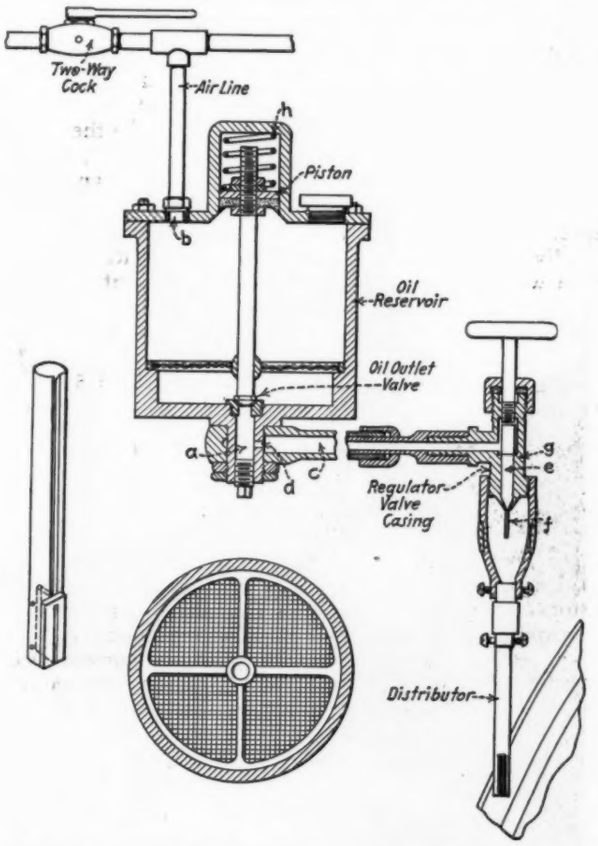
If we go one step further in our investigation we find that in these same five years all Class 1 railroads paid out in dividends only 51 per cent of the amount available and, what is even more remarkable, that the 32 roads of generally much stronger credit paid out only 56 per cent. In these ratios of the past, he who runs may read—not prosperity, but conservatism. In the future real prosperity may never materialize; Mr. Strauss opines that we are only a few steps from the brink of the abyss of government ownership of the railroads, but at least until that moral and economic calamity befalls us, the patient and long-suffering stockholders are not going to continue to be satisfied with only one-half the profits. We creditors are sufficiently broadminded, I hope, to recognize that the owners of the enterprise are entitled to higher compensation, certainly to the extent that prodigality is not substituted for reasonable thrift, while on the other hand, the stockholders are capable, I think, of appreciating that where only the informed and expert can judge of the adequacy of the charges to earnings for maintenance and depreciation, a surplus after dividend payments is of vital importance in reassuring the layman investor in bonds that his security is not being allowed to deteriorate.

A New Savings Bank Test

With these thoughts in mind we are now ready, I think, to formulate a new test of value for savings-bank investment—a test that in its application will concern itself with the two essentials we have been discussing: First, the margin of income over interest and rentals; and, second, the disposition of the marginal income. The statutory provision might then read as follows: Investment in the mortgage bonds of any railroad the gross income of which has averaged for the preceding five years an amount at least 180 per cent of the average fixed charges, and the dividend payments of which in cash have averaged for the same period not over 80 per cent of the average net income.

Locomotive Flange Oiler Operated by Compressed Air

THE locomotive flange oiler, shown in the illustration and patented by H. G. Sewell, 31 River road, Niagara Falls, Ontario, Canada, is operated by compressed air. The device consists of a two-way cock, an oil reservoir in which is enclosed a piston, valve and springs; a sight-feed regulating valve and a distributor to regulate the flow of oil to the wheel flange. The two-way cock is located in the cab within convenient reach of the engineman.



Cross-Sectional Views of the Sewell Locomotive Flange Oiler

When the oil reservoir has been filled and the two-way cock is opened, compressed air will enter the reservoir through the air pipe line and the air inlet into the reservoir. The air pressure, in addition to forcing down the oil in the reservoir, lifts the oil outlet valve off its seat by forcing up the piston connected to the valve by a valve stem. Thus, the oil will be forced down the passage *a* through the orifice *d* into the tube *c* and on through the extension-tube into the regulating valve casing. If the regulating valve is properly adjusted, the required amount of oil will pass down the passage *e*, and pin *f* and drip off into the distributor and from thence will be fed onto the flange of the wheel.

The oil feed is regulated by the opening of the valve *g*. A sight feed is obtained by observing the dripping of the oil from the pin *f* past the glass windows.

When the two-way valve is closed, the air pressure in the reservoir is released to the atmosphere at which time the spring *h*, acting on the piston, will restore the oil outlet valve to its seat, thus cutting off the supply of oil to the regulating valve. When once the regulating valve is adjusted, it need not be changed unless there is a change in temperature, which would tend to change the viscosity of the oil.

This flange oiler has been in service on a locomotive of the Canadian National during a period of two years.

* * *

An Unusual View of Part of a C. B. & Q. Switcher, Showing the Engineer

Looking Backward

Fifty Years Ago

The Secretary of the Interior at Washington, on July 23, rendered a decision in which it is held that bona fide settlers have the right to pre-empt any lands granted by Congress in aid of the Kansas Pacific that have not been disposed of by the company. This makes Kansas Pacific lands liable to sale at $1.25 an acre three years after completion of the railroad's construction.—*Chicago Railway Review,* July 27, 1878.

The railroad commissioner of Virginia has raised the question whether states can compel railways to maintain trains and routes against their will, on the ground of public convenience, by protesting the substitution of steamboat service for train service on the Richmond, Fredericksburg & Potomac from Quantico, Va., to Washington, D. C. He states: "The demand for the celerity of an uninterrupted all-rail route will not tolerate the delay, inconvenience and discomfort that must ensue from these transfers in so short a distance."—*Railway Age,* July 25, 1878.

Officers of narrow gage railroads assembled in national convention, at Cincinnati, Ohio, on July 17, adopted, among others, these resolutions: "On account of the cheaper cost of construction, lighter operating expenses, and smaller interest account, the narrow (or 3 ft.) gage is the factor that will finally solve the problem, and bring the country that which it so much needs—cheap transportation. The narrow gage road should no longer be looked upon as an auxiliary road merely because it is constructed on the 3 ft. gage. The narrow gage railroad is the road for the people and its cost comes within their reach."—*Railway Age,* July 25, 1878.

Twenty-Five Years Ago

The Baltimore & Ohio has just received from the builders the largest electric locomotive ever constructed, which is to be used in the tunnel at Baltimore, Md. The locomotive is made up of two units weighing 90 tons each and is designed to haul a freight train weighing 1,500 tons up a grade of 1½ per cent.—*Railway and Engineering Review,* July 25, 1903.

Since the reduction in fares from three cents to two cents a mile on May 1, 1898, local passenger earnings of the New York, Ontario & Western have steadily increased. Such earnings were 7.19 per cent greater in 1901 than in 1900 and 5.76 per cent greater in 1902 than in 1901 with a passenger density only slightly higher than the average for the entire United States.—*Railway Age,* July 31, 1903.

Ten Years Ago

Fifty per cent more troops were handled by the railways in the first six months of this year than were handled during the eight months of 1917 after the United States entered the war, according to figures compiled by the Troop Movement Section of the Railroad Administration. The total movement up to June 30 was 5,355,558 men, counting duplication. Of the total, 3,204,570 were moved since January 1.—*Railway Age,* July 26, 1918.

The director-general of railroads has created a short line railroad section under the supervision of the director of the division of public service and accounting. This section will obtain for the short line railroads not under federal control, fair division of joint rates, with roads under federal control, a reasonable car supply and protection against any undue disturbance in the routing of traffic.—*Railway Review,* July 27, 1918.

Communications and Books

The Labor Cost of Track Laying and Surfacing

WASHINGTON, D. C.

TO THE EDITOR:

The article by H. E. Hale, entitled "Determining the Labor Cost of Track Laying and Surfacing" which appeared in your issue of June 16, is very commendable insofar as it presents the issue which has developed between certain carriers and the Interstate Commerce Commission on this particular phase of the valuation work.

Mr. Hale's description of the development of the prices for reproduction estimates relates largely to the work of the Presidents' Conference Committee and he fails to describe the appreciable amount of data developed by individual carriers in support of their claims. Only a comparatively small number of carriers have used the Presidents' Conference Committee's "formulæ" as a basis for their claims for track laying and surfacing.

Mr. Hale designates as a "formula" the *schedule* of prices first used by the Bureau of Valuation in December, 1917 (Mr. Hale gives the date of a later memorandum as November 5, 1919). This schedule is in no sense a formula calling for rigid mathematical adjustments, such as Exhibit F, January, 1919 or the Boston and Maine Schedule contemplate.

The commission, in its estimates of cost, has relied upon a volume of data which includes all of that mentioned by Mr. Hale and nearly as much more which he failed to mention. The commission's interpretation of this immense volume of data has been the basis of its many decisions, none of which, unfortunately for certain carriers, coincides with the carrier's claims, based on these theoretical formulae.

The commission has been working under the definite mandate of Congress as embodied in Section 19a of the Valuation Act, and one provision of that act is worthy of mention:

"The commission shall***list the property***and show the value thereof***in conformity with the classification of expenditures for road and equipment, as prescribed by the Interstate Commerce Commission."

It should be obvious to anyone that the commission itself is best fitted to interpret the provisions of its own classifications of accounts. This was clearly evident in the New York, Philadelphia and Norfolk railroad case where the testimony given by Mr. Stone, which is referred to in this article, was definitely rejected after being designated as "appreciation" instead of "track laying and surfacing", as claimed.

The commission thus frowned upon the *speed theory* as a factor in reproduction cost for valuation purposes and it is my understanding that the valuation engineers of several representative carriers have unqualifiedly agreed with the commission in this particular. The greatest difference between the carriers following the Presidents' Conference Committee's methods, and the Bureau of Valuation today on the subject of track laying and surfacing is due almost entirely to this sum claimed for maintenance work and surfacing which would necessarily be done *after* the line would normally go into operation.

Now, as to Mr. Hale's general conclusions—

(1) Adjustments in data due to varying rates paid labor are not supported by the data referred to by Mr. Hale or any of the data used by the commission. Presidents' Conference Committee witnesses have testified that costs in localities where low labor rates were prevalent have been higher than costs where high rates were paid. It has always been my contention that there could be no direct ratio developed from labor rates alone. This is amply borne out by the relation of present day track laying and labor costs to those of the pre-war period. Present day costs are usually higher than pre-war costs but bear no direct ratio to labor rates.

(2) The speed factor relates to maintenance and in a reproduction estimate must be considered rather as an element of value than as an element of cost in track laying and surfacing.

(3) No rigid mathematical formula should be used since it is neither scientific, reasonable, logical nor can it be uniformly applied accurately.

In conclusion let me say that it is certainly evident that the commission's estimates for track laying must appear reasonable to valuation engineers when it is realized that carriers representing nearly one-half the mileage in the United States have either accepted these prices by stipulation or have allowed them to go to the final report without protest, on the basis of the commission's determination.

H. J. SAUNDERS, 2nd Assistant Supervising Engineer,
Bureau of Valuation, Interstate Commerce Commission.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Industry in the South: Its Growth and Promise. Facts on Southern industry in general and on dairying, mining, and forestry. 8 p. Pub. by Development Bureau, Illinois Central System, Chicago, Ill., *Apply.*

Unloads of Fresh Fruits and Vegetables at Sixty-Six Important Consuming Markets in the United States, Year 1927. Bulletin 31 in the Commodity Price List Series summarizing sources of supply of the 18 fresh fruits and vegetables listed, with analyses of the 66 markets, extent of distribution and length of haul. 24 p. Pub. by Bureau of Railway Economics, Washington, D. C., *Apply.*

Sixteenth Annual Report, Medical Department, United Fruit Company, 1927. Twelve papers on malaria and its control in Section II, and Section V on snakes (tropical), snake-bite cases and the development of antivenins will be of interest to railroaders in various places having either or both of these problems to contend with. Illustrated. 368 p. Pub. by United Fruit Company, Boston, Mass.

Bibliothek-Katalog...1927. Subject catalog of the Headquarters Library, Swiss Federal Railways, published primarily for convenience of the employes. Helpful to others also as a bibliography of important works on all phases of railroading written in French, German, and Italian, with a few American items like *Railway Age* and Bureau of Railway Economics publications appearing now and then. 227 p. Pub. by General Management, Swiss Federal Railways, Bern, Switzerland.

Periodical Articles

Mechanical Wear of Ties, by Hermann von Schrenk. Historical survey of the use of tie plates, and discussion of causes of mechanical wear, European and American track practice followed by recommendations. Bulletin of the American Railway Engineering Association No. 306, June, 1928, p. 1-180.

The Use of Colonial Timber for Railway Sleepers. Wherein the relations of modern forestry methods and experiments, the annual demand of French railways for timber and ties, the eradication of yellow fever in Africa, and transport and port improvements in Gabon, the Cameroons and the Ivory Coast, are presented in a fairly short article. Bulletin of the International Railway Congress, June 1928, p. 479-488.

German Combined Air-and-Rail Express-Freight Service, by A. Douglas Cook. "The service is known in Germany as 'Fleiverkehr'—a new word, coined for this particular purpose from 'Flugzug' (airplane) and 'Eisenbahn' (railroad), in which the first two letters of each word; that is 'Fl' and 'Ei' were placed before 'verkehr' (traffic), making 'Fleiverkehr,' or air-rail traffic. Extends to all European countries members of the International Air Traffic Association which are served by the Deutsche Luft Hansa. Commerce Reports, July 16, 1928, p. 147-148.

Odds and Ends of Railroading

The London motor coach conductor who used to spend his holiday riding on motor coaches, has nothing on the "red caps" of the St. Louis union station. They have formed an athletic association, with a membership of 79. The idea is that, after carrying suitcases around all day, they may obtain a little light exercise with the dumb-bells and Indian clubs.

"Where the Flying Fishes Play"

W. J. Air, executive manager of the Burma Railways, who arrived in this country recently, maintains that building a road to Mandalay is a tough job, Kipling's verse to the contrary notwithstanding. His company is building a line from Rangoon to Mandalay at a cost of $35,000 per mile.

Americans All

In the course of a recent check of employees of the Chicago, Rock Island & Pacific at the LaSalle Street station, Chicago, it was discovered that 17 were foreign born. Of these, three each were from England and Norway, two from Denmark and one from each of the following: Italy, Switzerland, Ireland, Sweden, Finland, Canada, Scotland, Bohemia and Germany.

An Unusual Timepiece

The following letter has been received by the Southern Pacific from the Headquarters ranch, Quihi, Texas: "When our last reliable timepiece failed us recently we did not know for a while what to do since the nearest watch was several miles away. One of the boys remembered that your limited train would pass the place at 11:26 in the morning so we waited around and when she blew by we set all clocks and watches accordingly. On my last trip to the city my watch tallied exactly with a standard clock in a jeweler's window."

Berries for Passengers

During the Ozark strawberry season the Lions' Club of Springfield, Mo., advertised the city, the Ozarks and strawberries, by presenting miniature handbags of strawberries to passengers on Frisco trains passing through Springfield. The distribution was made during the week of May 29 by members of the Girls Drum Corps, in Scottish costume, and it attracted much favorable comment. Although the distribution was free in this case, it calls to mind various famous railway station food vendors elsewhere. No one who has been through Charlottesville, Va., on the Chesapeake & Ohio, will forget the old negress who sells chicken sandwiches on the platform, nor will he soon forget the sandwiches. Other countries are more given to platform food vending than the United States. In Mexico, for example, each station swarms with vendors of food and drink. The only other place where strawberries are distributed, that comes to mind at the moment, is Domo D'Ossola, in Italy, a few miles south of the entrance of the Simplon tunnel into Switzerland. Here the strawberry vendors roam up and down the platform, musically calling their wares in a dozen languages: "Framboises, fraizi, strawberries, erdbeeren."

Typewriters Help Run Railroad

Prompt movement of western fruits and other perishables to distant eastern markets is facilitated by batteries of typewriters, on the Southern Pacific, these machines being moved from point to point as products ripen and become ready for market.

When laid end to end the typewriters that tap out the daily business of the company would reach more than a mile. On the company's Pacific Lines 3,026 typewriters are in service. Included among these are 72 special billing typewriters, 145 portable and 37 fan-fold machines. The latter typewriter is built to take continuous strips of folded sheets and carbon papers, and is very efficient for certain types of work. A large proportion of the portables are carried in the company's dining cars, and are used in typing menus. There are no idle typewriters. A clearing house is maintained through which machines are shifted from one department, or one city to another, as occasion demands. Large numbers of typewriters are constantly being moved from point to point, following the variations of peak and seasonal business. Fruit and vegetable crop movements in the Imperial and San Joaquin valleys and elsewhere call for emergency typewriters which are supplied from the central store.

Vision

The following is quoted from a booklet on Florida issued by the Atlantic Coast Line:

Forty-five years ago a buggy, drawn by two tired horses, came slowly along a woods road in South Florida, to where a contractor's crew was at work. In the buggy there sat a very ordinary-looking man.

"What are you doing?" he asked the contractor.

"Building a railroad for a foolish man," was the answer.

"Who is the foolish man?"

"Henry B. Plant," the contractor replied, and asked:

"What is your name?"

"I am Henry B. Plant."

Later when the young contractor asked for advice, Plant said:

"Some day this railroad will be a part of a great system that will serve all South Florida. Stay here and a city will grow up around you."

The former contractor is now Congressman Herbert J. Drane.

The railroad is part of the main line of the Atlantic Coast Line, and where Plant talked to his contractor in the virgin pine forest, the city of Lakeland has risen.

This Employee Never Takes a Vacation

A traffic policeman, who never leaves his post of duty day or night, guards the entrance to the car repair yard of the Illinois Central at Markham, Ill. Such an unusual event should be commemorated, so his picture is being run in this department.

He is made of sheet iron and is painted on both sides so as to regulate traffic in both directions. Car Foreman Hobson, who created this faithful fellow, found that no one around the shop was prepared to make a good sketch of a policeman. Therefore, he had a car repairer put on an overcoat and lie down on a piece of sheet iron. He traced his outline with chalk and the realistic "cop" is the result.

NEWS *of the* WEEK

Union Station, Kansas City, Mo.—Galloway Photo.

TWO FELLOWSHIPS in timber research are open at Washington University, St. Louis, Mo., for the school year 1928-29. These fellowships, which have been established by the American Creosoting Company, Louisville, Ky., pay $1,000 in addition to tuition annually. Engineers who have done one or more years of laboratory work will be given special consideration. These scholarships are under the direction of J. L. VanOrnum, department of civil engineering.

OFFICIALS of railroads which touch or cross the Canadian boundary conferred with the assistant secretary of the Treasury, Seymour Lowman, and customs officials, at Washington on July 18, on problems involved in smuggling across the border. Mr. Lowman issued a statement saying that the railroads and the customs officials are in complete harmony and are mutually assisting each other in working out a plan that will prevent the illegal smuggling of merchandise into the United States. Some difficulty has arisen because smugglers have counterfeited or stolen the seals used on freight cars crossing the border or have been aided in various ways by minor employees of the railways.

A FINE of $20,000 for violations of the Elkins law was assessed against the Detroit, Toledo & Ironton by Judge Charles C. Simons in the federal district court at Detroit, Mich., on July 19. The railroad was indicted in March on 75 counts for failure to charge demurrage on material for foundations shipped by the Raymond Concrete Pile Company to the Fordson Motor Company plant in May, 1925. Twenty-five of the counts were concurrent, the railroad plead guilty to 20 and the remaining 30 were dismissed. Judge Simons fixed the fine at $1,000 for each of the 20 charges. The original complaint was brought by the Interstate Commerce Commission.

Pennsylvania to Spend Forty-Five Million in Pittsburgh

Vice-President E. T. Whiter of the Pennsylvania on July 25 announced that his company plans to spend $45,000,000 during the next five years for improved facilities in the Pittsburgh district.

Circus Train Wrecked in New Hampshire

Five circus workers were killed and eight injured on July 22, when five cars of a 20-car train transporting the Bernardi Greater Shows from Laconia, N. H., to Gloucester, Mass., over the Boston & Maine, were wrecked near Farmington, N. H. The accident happened when a pin dropped out and released the drawbar under the sixth flat car in the train. When the bar plowed into the track bed the front end of the car was lifted from the rails while the four following cars were also thrown off the track.

Single-plate Wheel—a Correction

In the June 23, daily edition of the *Railway Age* there appeared on page 1490D49 a description of a single-plate wheel with a chilled tread and flange, the design of which has been developed as a result of the recommendations of the Association of Manufacturers of Chilled Car Wheels, to the American Railway Association. The last sentence in the third paragraph which read "....desirable features of the double-plate wheel, such as a hard non-flowing, wear-resisting but, this latter facilitating...." should have read "....desirable features of the double-plate wheel such as hard, non-flowing, wear-resisting tread and flange metal with softer metal in the plates and hub this latter facilitating....."

Hearings on Grade Crossing Eliminations in N. Y.

Hearings on the elimination of several grade crossings in New York State have recently been held by the New York Public Service Commission. The proceedings were concerned with seven grade crossings on the New York Central, six on the Lehigh Valley, four each on the Delaware, Lackawanna & Western and Erie and one on the New York Chicago & St. Louis.

At a hearing on July 18, the Boston & Maine submitted two plans for the elimination of a grade crossing on its line in Scotca, N. Y. Either plan is estimated to cost $150,000. At a hearing on July 17, the New York State Department of Public Works submitted a plan for the elimination of a grade crossing on the Delaware & Hudson in Cobleskill. This plan calls for an outlay of about $158,000 exclusive of land and damages. The railroad sought time for study of the plan. Plans for the elimination of other Delaware & Hudson crossings in Duanesburgh, N. Y., were also submitted by both the railroad and the Department of Public Works.

Pennsylvania Steamer Launched

The Pennsylvania's new passenger and freight steamer "Virginia Lee," designed for the Company's Chesapeake Bay ferry service between Norfolk and Cape Charles, Va., was launched July 24 at the Fore River yard of the Bethlehem Shipbuilding Corporation, Quincy, Mass.

The new steamer is approximately 75 per cent complete, the keel having been laid last February. Following the launching, boilers and engines will be installed, the superstructure completed, and the ship generally fitted for active service. It is expected that the vessel will begin operation between Norfolk and Cape Charles early in October. She will be 300 feet in length, with 50 foot beam, and will have a carrying capacity of 1200 passengers. Her engine will develop 2400 h.p., and will be capable of a sustained average speed of 18 miles per hour. The vessel will have three decks, the two upper decks being devoted to passenger transportation. The lower deck, in addition to accommodating automobiles, will also carry freight. On the upper deck there will be two passenger saloons, while the top deck will provide staterooms for passengers, officers' quarters, and a sheltered space aft for summer use. The dining-room will accommodate 72 patrons.

Human Relations Conference

Several railroad speakers will appear on the program of the Eleventh Annual Conference on Human Relations in Industry, which will be held at Silver Bay on Lake George, New York, August 29-

(*Continued on page 168*)

Operating Statistics of Large Steam Railways—Selected Items for May, 1928, Com

Region, road and year	Average miles of road operated	Locomotive-miles: Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotives and tenders	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany.....1928	407	193,947	206,626	21,655	5,353	67.6	274,920	103,121	98	21	17.6	30
1927	407	208,159	222,389	23,067	5,385	67.0	278,994	104,093	107	18	14.7	5
Boston & Maine.....1928	2,074	424,186	542,758	52,226	13,476	69.9	681,758	268,021	269	53	16.4	37
1927	2,085	508,272	581,003	56,084	13,218	70.1	673,762	271,892	280	71	20.1	29
N. Y., New H. & Hart...1928	2,122	552,712	619,414	40,579	17,206	66.2	925,651	371,639	319	55	14.7	47
1927	2,140	589,847	629,808	39,428	16,716	67.6	881,993	360,291	322	61	16.0	33
Great Lakes Region:												
Delaware & Hudson.....1928	875	350,855	474,043	52,833	11,042	63.4	678,363	319,274	245	37	13.2	78
1927	875	362,972	489,634	53,845	10,538	62.4	682,659	331,609	246	35	12.5	80
Del., Lack. & Western...1928	998	566,515	643,259	73,444	18,227	65.0	1,056,828	442,619	249	58	18.8	5
1927	999	607,049	708,164	84,316	19,405	66.4	1,112,867	475,603	275	47	14.5	19
Erie (inc. Chi. & Erie)....1928	2,317	897,213	977,614	85,689	38,260	63.2	2,323,647	975,044	412	116	22.0	35
1927	2,317	925,678	1,033,818	99,921	36,290	64.7	2,167,536	932,054	465	174	27.3	63
Lehigh Valley 1928	1,346	589,512	651,929	77,491	18,684	63.3	1,135,087	497,639	361	79	17.9	76
1927	1,346	600,468	658,346	73,022	18,703	64.2	1,113,118	493,928	365	82	18.3	61
Michigan Central 1928	1,822	580,549	599,065	20,281	20,380	60.2	1,142,838	390,619	200	72	26.5	28
1927	1,820	586,986	602,571	18,790	20,071	60.8	1,102,035	385,050	237	68	22.2	55
New York Central.....1928	6,459	2,039,855	2,285,529	159,364	79,486	61.5	4,782,828	1,972,325	1,034	359	25.8	279
1927	6,478	2,021,644	2,287,504	156,570	80,655	62.2	4,915,597	2,109,567	1,165	281	19.4	373
New York, Chi. & St. L..1928	1,665	611,590	618,684	7,307	20,530	62.5	1,146,162	422,380	223	59	20.8	64
1927	1,665	610,587	615,303	6,244	20,771	65.9	1,118,522	424,838	230	58	20.1	51
Pere Marquette 1928	2,181	438,354	443,229	6,613	11,446	62.4	661,616	269,795	179	38	17.5	15
1927	2,180	433,533	439,577	6,909	11,263	64.8	638,328	266,625	180	41	18.5	13
Pitts. & Lake Erie.....1928	231	116,944	118,886	1,909	4,315	60.1	352,087	195,408	54	19	26.1	11
1927	231	115,951	117,991	1,469	4,557	63.9	357,581	208,914	58	18	23.7	15
Wabash 1928	2,497	781,345	814,667	12,452	23,754	63.5	1,336,806	481,725	304	61	16.8	60
1927	2,497	713,185	740,092	12,449	22,034	64.5	1,220,491	438,743	319	59	15.6	66
Central Eastern Region:												
Baltimore & Ohio.....1928	5,534	1,919,580	2,263,733	176,157	57,607	60.8	3,821,585	1,771,966	998	253	20.2	176
1927	5,541	2,053,614	2,412,919	202,728	60,896	62.0	4,068,722	1,963,284	1,049	242	18.7	123
Central of New Jersey....1928	691	281,537	305,946	50,403	8,672	58.1	579,530	275,329	178	36	16.9	28
1927	691	280,714	305,009	48,197	8,318	57.9	559,048	267,129	183	37	16.7	15
Chicago & Eastern Ill.....1928	945	229,818	230,486	2,939	5,993	64.2	355,507	154,371	117	53	31.2	49
1927	945	255,168	261,502	3,711	6,718	64.5	395,681	173,644	123	49	28.4	46
Clev., Cin., Chi. & St. L...1928	2,370	734,585	759,304	17,459	23,804	60.9	1,525,392	685,808	335	107	24.1	53
1927	2,374	773,204	814,707	27,222	25,040	62.2	1,603,663	740,819	341	89	20.7	42
Elgin, Joliet & Eastern....1928	461	141,139	149,040	5,905	4,080	63.1	305,217	154,304	77	13	14.0	1
1927	461	128,219	135,604	5,022	3,643	63.7	275,673	142,357	80	12	12.6	...
Long Island 1928	396	53,560	54,494	17,727	672	53.8	46,591	18,889	57	10	14.5	...
1927	393	51,348	56,213	14,941	701	55.3	47,311	19,309	52	10	15.5	...
Pennsylvania System 1928	10,758	4,037,788	4,579,132	384,343	140,421	63.5	9,109,211	4,136,508	2,805	349	11.1	804
1927	10,844	4,590,739	5,051,952	402,617	142,887	63.7	9,364,516	4,350,449	2,849	436	13.3	648
Reading 1928	1,129	600,590	660,230	53,676	17,295	59.6	1,214,026	602,886	310	75	19.4	38
1927	1,130	643,092	697,100	68,392	17,282	59.8	1,229,340	619,447	323	72	18.3	38
Pocahontas Region:												
Chesapeake & Ohio.....1928	2,723	1,098,890	1,181,777	42,605	36,973	55.7	3,014,451	1,613,582	553	89	13.8	96
1927	2,650	1,205,718	1,298,177	51,877	40,773	56.0	3,298,022	1,770,626	545	84	13.4	44
Norfolk & Western.....1928	2,231	830,434	987,827	34,672	30,882	58.0	2,558,981	1,356,795	527	49	8.5	157
1927	2,232	902,154	1,098,888	40,568	31,874	58.4	2,691,211	1,452,968	554	51	8.5	131
Southern Region:												
Atlantic Coast Line.....1928	5,105	755,092	760,041	11,114	19,719	58.5	1,104,684	386,520	432	54	11.1	93
1927	5,081	816,731	827,083	13,224	22,351	59.6	1,268,813	470,080	423	61	12.6	78
Central of Georgia.....1928	1,898	281,191	282,851	4,697	6,790	68.2	372,958	154,305	136	23	14.4	13
1927	1,898	301,072	304,767	5,422	7,363	71.0	397,694	171,045	137	26	16.0	10
Ill. Cent. (inc. Y. & M. V.)1928	6,710	1,956,351	1,972,555	30,613	52,469	62.3	3,290,464	1,302,760	756	101	11.8	41
1927	6,594	2,068,474	2,084,524	52,492	56,458	62.3	3,606,571	1,501,897	795	100	11.2	23
Louisville & Nashville.....1928	5,061	1,736,522	1,801,300	59,431	36,681	57.9	2,534,591	1,183,840	604	101	14.3	39
1927	5,048	1,865,862	1,951,867	63,339	39,805	59.7	2,721,659	1,297,504	609	123	16.8	11
Seaboard Air Line.....1928	4,484	568,370	585,590	7,085	14,660	63.0	821,820	303,447	272	68	20.0	11
1927	4,268	626,305	636,065	7,281	15,700	61.6	905,313	343,764	247	46	15.6	25
Southern 1928	6,718	1,503,623	1,529,903	34,390	37,839	61.7	2,157,495	834,618	837	106	11.2	78
1927	6,718	1,547,504	1,576,220	35,328	38,677	64.1	2,154,459	854,410	838	112	11.8	33
Northwestern Region:												
Chi. & North Western....1928	8,463	1,446,938	1,509,409	25,331	37,788	63.1	2,227,140	850,224	773	136	15.0	101
1927	8,463	1,300,375	1,344,321	22,708	33,755	66.8	1,861,447	776,086	717	143	16.6	128
Chi., Milw., St. P. & Pac..1928	11,247	1,591,318	1,695,250	103,127	48,814	63.7	2,837,486	1,178,577	804	141	14.9	195
1927	11,202	1,517,445	1,620,790	98,699	46,616	65.5	2,630,397	1,113,431	792	175	18.1	183
Chi., St. P., Minn. & Om..1928	1,724	300,810	319,682	14,008	6,512	65.8	357,560	145,601	153	24	13.4	27
1927	1,724	284,828	303,563	11,911	6,140	69.2	324,479	134,601	161	37	18.6	38
Great Northern 1928	8,305	795,301	824,747	49,716	30,514	66.9	1,834,816	893,785	513	140	21.5	94
1927	8,164	745,770	769,845	42,135	28,404	66.4	1,709,059	828,906	530	168	24.0	130
Minn., St. P. & S. Ste. M.1928	4,358	494,659	512,433	4,806	14,002	67.5	743,871	322,028	216	32	12.7	26
1927	4,368	454,430	468,267	3,738	12,343	68.9	642,543	280,496	294	29	9.1	19
Northern Pacific 1928	6,413	806,442	868,989	51,436	27,802	66.7	1,586,335	684,168	428	127	22.9	48
1927	6,496	756,120	807,258	42,503	25,819	70.8	1,411,929	638,625	466	147	23.9	85
Oreg.-Wash. R. R. & Nav..1928	2,246	197,944	208,621	15,122	5,744	69.3	332,358	147,708	127	16	11.4	6
1927	2,154	184,534	193,887	13,830	5,367	72.6	301,805	137,724	135	17	11.4	9
Central Western Region:												
Atch., Top. & S. Fe (including P. & S. F.)....1928	10,395	1,521,305	1,637,810	87,303	49,279	65.7	2,865,402	1,074,787	763	144	15.8	196
1927	10,377	1,638,273	1,755,140	90,419	53,000	64.3	3,117,489	1,155,801	754	167	18.1	143
Chicago & Alton.....1928	1,000	282,136	299,621	2,865	7,005	61.3	424,960	166,649	124	31	20.1	23
1927	995	266,587	281,123	2,183	6,246	58.7	384,034	138,460	143	14	9.1	44
Chi., Burl. & Quincy.....1928	9,317	1,408,430	1,457,256	55,239	43,552	64.0	2,469,812	1,082,203	743	169	18.5	89
1927	9,334	1,350,221	1,400,126	58,115	39,953	64.2	2,211,778	940,608	773	184	20.1	78
Chi., Rock I. & Pacific...1928	7,566	1,382,566	1,448,353	15,305	34,663	60.4	2,059,162	779,445	583	106	15.4	85
1927	7,562	1,440,799	1,489,880	17,454	35,594	60.8	2,080,474	789,443	548	115	17.3	30
Denver & R. G. Wn.....1928	2,563	209,383	238,704	35,967	6,303	69.1	358,329	164,472	221	48	17.9	38
1927	2,552	222,533	263,682	45,406	6,528	70.7	366,397	173,556	220	47	17.5	34
Oregon Short Line.....1928	2,539	301,568	324,670	33,935	9,037	66.8	532,914	224,201	157	28	15.0	24
1927	2,539	249,005	267,657	24,640	7,317	70.0	422,989	189,648	180	26	12.5	53
So. Pacific—Pacific Lines..1928	8,747	1,683,766	1,830,722	258,656	52,645	61.7	3,236,996	1,143,967	719	207	22.4	62
1927	8,750	1,625,296	1,762,571	236,652	49,665	62.2	3,047,894	1,117,941	725	223	23.5	58
Union Pacific 1928	3,713	1,029,262	1,053,397	45,920	41,048	69.1	2,228,273	832,995	387	60	13.5	104
1927	3,714	807,678	829,882	41,062	34,154	76.4	1,720,008	680,717	442	51	10.3	183
Southwestern Region:												
Gulf, Colo. & S. Fe.....1928	1,933	260,603	270,463	6,919	8,216	62.5	511,910	221,151	133	21	13.8	36
1927	1,933	321,610	334,624	8,986	9,770	60.4	631,242	272,909	130	29	18.2	17
Mo.-Kans.-Tex. Lines.....1928	3,176	421,123	426,562	10,310	13,887	58.5	835,176	316,489	198	38	16.0	84
1927	3,176	438,075	442,854	9,367	14,099	56.9	861,347	317,536	219	30	12.0	98
Missouri Pacific 1928	7,433	1,314,395	1,351,742	41,063	38,006	63.2	2,252,939	911,064	538	85	13.7	31
1927	7,317	1,294,773	1,350,907	45,059	37,691	67.8	2,124,967	914,092	540	61	10.2	2
St. Louis-San Francisco...1928	4,982	801,266	814,969	9,830	18,987	60.1	1,154,652	463,374	400	55	12.0	49
1927	4,860	822,181	842,205	12,037	20,330	63.3	1,203,296	494,396	400	55	12.0	64
Texas & New Orleans....1928	4,708	803,621	809,772	1,373	16,722	63.9	982,259	390,024	274	74	21.2	33
1927	4,570	830,048	837,068	870	18,581	64.6	1,111,125	464,820	253	58	18.7	24
Texas & Pacific.....1928	2,015	614,466	614,466	6,250	15,207	54.8	1,049,431	398,926	207	18	7.8	15
1927	1,954	382,496	382,496	3,177	10,083	60.8	614,029	225,866	159	18	10.1	16

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

pared with May, 1927, for Roads with Annual Operating Revenues above $25,000,000.

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross tons per train, excluding locomotives and tenders	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive miles per locomotive-day
New England Region:													
Boston & Albany....1928	2,776	5,122	7,898	5.7	19,913	1,418	532	19.3	421	32.4	8,173	159	61.9
1927	3,265	5,235	8,500	2.8	18,004	1,340	500	19.3	395	30.5	8,250	170	63.4
Boston & Maine....1928	12,226	11,423	23,649	4.9	18,842	1,607	632	19.9	366	26.3	4,169	111	59.6
1927	13,482	12,137	25,619	6.8	15,988	1,326	535	20.6	342	23.7	4,206	121	58.6
N. Y., New H. & Hart..1928	17,761	17,244	35,005	8.0	21,862	1,675	672	21.6	342	24.0	5,650	107	56.9
1927	23,060	18,633	41,693	16.9	19,725	1,495	611	21.6	279	19.1	5,431	117	56.4
Great Lakes Region:													
Delaware & Hudson....1928	8,693	5,826	14,519	3.6	23,517	1,933	910	28.9	709	38.7	11,771	130	60.3
1927	9,050	5,971	15,021	4.4	23,425	1,881	914	31.5	712	36.2	12,223	146	62.4
Del., Lack. & Western...1928	17,364	7,555	24,919	4.9	23,236	1,865	781	24.3	573	36.3	14,307	130	75.5
1927	17,049	8,333	25,382	2.6	22,638	1,833	783	24.5	604	37.1	15,353	135	79.4
Erie (inc. Chi. & Erie)..1928	30,581	18,011	48,592	5.2	31,951	2,590	1,087	25.5	547	40.2	13,576	116	65.0
1927	35,136	19,258	54,394	7.1	26,546	2,342	1,007	25.7	553	33.3	12,975	125	57.2
Lehigh Valley 1928	23,263	9,820	33,083	10.2	26,648	1,925	844	26.6	485	28.8	11,927	145	53.5
1927	23,195	9,434	32,629	9.7	26,006	1,854	823	26.4	488	28.8	11,840	143	52.9
Michigan Central 1928	19,391	15,116	34,507	4.9	31,228	1,969	673	19.2	365	31.6	6,916	103	73.5
1927	16,888	17,648	34,536	4.6	28,620	1,877	656	19.2	360	30.8	6,826	106	65.9
New York Central....1928	71,892	70,768	142,660	5.6	31,963	2,345	967	24.8	446	29.2	9,850	103	56.6
1927	69,400	73,156	142,556	3.7	30,503	2,431	1,043	26.2	477	29.3	10,505	105	54.5
New York, Chi. & St. L..1928	14,681	9,620	24,301	8.0	26,537	1,874	691	20.6	561	43.6	8,185	105	71.6
1927	13,347	9,846	23,193	5.4	25,082	1,832	696	20.5	591	43.8	8,231	106	69.6
Pere Marquette....1928	10,771	7,904	18,675	4.7	19,565	1,509	615	23.6	466	31.7	3,991	102	67.0
1927	11,105	8,419	19,524	3.4	18,157	1,472	615	23.7	441	28.7	3,945	105	65.3
Pitts. & Lake Erie....1928	15,665	6,859	22,524	5.9	34,074	3,011	1,671	45.3	280	10.3	27,256	94	53.7
1927	13,425	7,643	21,068	4.0	33,419	3,084	1,802	45.8	320	10.9	29,116	95	50.8
Wabash 1928	16,007	10,832	26,839	3.1	29,046	1,711	617	20.3	579	45.0	6,223	110	73.0
1927	15,203	11,503	26,706	2.8	26,876	1,711	615	19.9	530	41.3	5,668	124	64.2
Central Eastern Region:													
Baltimore & Ohio....1928	74,926	29,554	104,480	5.9	23,149	1,991	923	30.8	547	29.2	10,328	143	62.9
1927	74,670	35,110	109,780	4.3	21,608	1,981	956	32.2	577	28.8	11,429	146	65.4
Central of New Jersey...1928	17,580	10,447	28,027	4.2	22,787	2,058	978	31.7	317	17.2	12,853	135	53.6
1927	18,432	11,034	29,466	4.9	19,287	1,992	952	32.1	292	15.7	12,472	147	52.0
Chicago & Eastern Ill...1928	13,529	3,597	17,126	30.5	23,128	1,547	672	25.8	291	17.6	5,269	133	44.3
1927	14,213	4,447	18,660	21.1	21,409	1,551	681	25.8	300	18.0	5,927	137	50.0
Clev., Cin., Chi. & St. L.1928	23,948	20,758	44,706	3.8	27,818	2,077	934	28.8	495	28.2	9,333	114	56.7
1927	18,272	21,532	39,804	5.2	26,889	2,074	958	29.6	600	32.6	10,067	116	63.2
Elgin, Joliet & Eastern...1928	9,573	6,747	16,320	4.8	16,477	2,163	1,093	37.8	305	12.8	10,807	121	56.2
1927	9,237	6,862	16,099	6.7	14,198	2,140	1,105	39.1	285	11.5	9,971	131	49.8
Long Island 1928	1,626	5,600	7,226	1.3	5,303	870	353	28.1	84	5.6	1,540	241	34.7
1927	1,752	6,260	8,012	1.3	5,024	921	376	27.5	78	5.1	1,584	306	37.0
Pennsylvania System 1928	222,967	80,500	303,467	6.5	26,569	2,256	1,024	29.5	440	23.5	12,404	120	50.8
1927	216,876	81,379	298,255	5.2	23,326	2,040	948	30.4	471	24.3	12,941	119	53.6
Reading 1928	27,528	11,846	39,374	5.9	22,542	2,021	1,004	34.9	494	23.8	17,228	141	59.9
1927	25,737	13,370	39,107	3.0	21,306	1,912	963	35.9	511	23.9	17,685	149	62.5
Pocahontas Region:													
Chesapeake & Ohio....1928	31,300	9,196	40,496	2.5	34,531	2,743	1,468	43.6	1,285	52.8	19,112	86	61.5
1927	28,205	13,420	41,625	2.9	31,005	2,735	1,469	43.4	1,372	56.5	21,553	92	69.2
Norfolk & Western....1928	30,353	7,711	38,064	1.1	42,143	3,081	1,634	43.9	1,150	45.1	19,614	123	57.3
1927	28,183	8,942	37,125	2.3	38,991	2,983	1,611	45.6	1,263	47.4	21,002	129	60.7
Southern Region:													
Atlantic Coast Line....1928	23,672	9,047	32,719	5.7	21,118	1,463	512	19.6	381	33.2	2,442	104	51.1
1927	22,909	11,368	34,277	4.7	20,955	1,554	576	21.0	442	35.3	2,985	105	56.0
Central of Georgia....1928	5,041	3,899	8,940	4.8	19,006	1,326	549	22.7	557	35.9	2,623	131	58.3
1927	4,620	5,584	10,204	3.9	19,089	1,321	568	23.2	541	32.8	2,908	130	61.4
Ill. C. (inc. Y. & M. V.).1928	44,772	20,092	64,864	7.7	24,042	1,682	666	24.8	648	41.9	6,263	125	75.4
1927	42,936	25,720	68,656	6.6	23,644	1,744	726	26.6	706	42.6	7,347	120	77.0
Louisville & Nashville...1928	44,626	16,109	60,735	9.0	18,965	1,460	682	32.3	629	33.6	7,545	141	85.1
1927	44,014	21,034	65,048	8.7	17,478	1,459	695	32.6	643	33.0	8,291	140	88.8
Seaboard Air Line....1928	16,086	8,356	24,442	7.5	18,792	1,446	534	20.7	400	30.7	2,183	132	56.2
1927	15,234	8,991	24,225	5.2	17,677	1,445	549	21.9	458	33.9	2,599	130	71.0
Southern 1928	47,831	18,447	66,278	7.4	19,632	1,435	555	22.1	406	29.8	4,007	151	53.5
1927	44,394	18,867	63,261	5.0	19,029	1,392	552	22.1	436	30.8	4,102	154	54.7
Northwestern Region:													
Chi. & North Western...1928	47,437	26,810	74,247	7.2	19,796	1,539	588	22.5	369	26.0	3,241	118	54.5
1927	50,852	27,393	78,245	7.8	17,657	1,431	597	23.0	320	20.8	2,958	131	51.3
Chi., Mil., St. P. & Pac..1928	48,605	20,930	69,535	3.4	23,025	1,783	741	24.1	547	35.6	3,380	122	61.4
1927	53,453	20,145	73,598	6.2	21,849	1,733	734	23.9	488	31.2	3,206	135	57.3
Chi., St. P., Minn. & Om.1928	2,361	8,312	10,673	7.1	15,350	1,189	484	22.4	440	29.9	2,725	113	60.8
1927	3,122	8,336	11,458	9.6	14,674	1,139	473	21.9	379	25.0	2,519	123	51.5
Great Northern 1928	40,808	8,750	49,558	7.2	27,501	2,307	1,124	29.3	582	29.7	3,472	116	43.2
1927	40,935	7,176	48,111	7.3	27,415	2,292	1,111	29.2	556	28.7	3,275	120	37.6
Minn., St. P. & S. Ste. M..1928	19,513	5,064	24,577	5.8	17,812	1,504	651	23.0	428	27.6	2,384	95	67.3
1927	19,918	5,252	25,170	4.3	16,588	1,414	617	22.7	367	23.4	2,071	107	47.1
Northern Pacific 1928	37,421	6,771	44,192	9.2	25,642	1,967	848	24.6	499	30.4	3,441	136	53.5
1927	37,876	6,457	44,333	8.1	23,872	1,867	845	24.7	465	26.5	3,171	137	44.7
Oreg.-Wash. R. R. & Nav.1928	8,090	3,052	11,142	6.9	20,700	1,679	746	25.7	428	24.0	2,122	170	50.5
1927	7,196	4,017	11,213	5.2	20,527	1,635	746	25.7	396	21.3	2,062	174	44.1
Central Western Region:													
Atch., Top. & S. Fe (in- 1928	62,545	16,024	78,569	5.8	28,087	1,884	706	21.8	441	30.8	3,335	108	61.4
cluding P. & S. F.)...1927	59,210	18,106	77,316	5.8	26,679	1,903	705	21.8	482	34.4	3,593	111	64.6
Chicago & Alton....1928	10,551	4,092	14,643	3.2	22,037	1,506	591	23.8	367	25.2	5,377	129	63.0
1927	10,555	4,367	14,922	3.6	18,584	1,441	519	22.2	299	23.0	4,489	158	58.2
Chi., Burl. & Quincy....1928	48,314	18,408	66,722	6.2	23,691	1,754	768	24.8	523	32.9	3,747	125	53.5
1927	50,877	15,812	66,689	5.0	21,590	1,638	697	23.5	455	30.1	3,251	136	51.3
Chi., Rock I. & Pacific..1928	31,822	17,462	49,284	7.5	20,349	1,489	564	22.5	510	37.6	3,323	136	68.5
1927	33,400	20,835	54,235	7.8	18,208	1,444	548	22.2	470	34.8	3,368	134	73.3
Denver & R. G. Wn....1928	12,164	2,700	14,864	3.1	18,959	1,711	786	26.1	357	19.8	2,070	179	33.0
1927	11,640	2,767	14,407	3.2	17,638	1,647	780	26.6	389	20.7	2,194	181	37.5
Oregon Short Line....1928	7,648	3,714	11,362	5.1	24,767	1,767	743	24.8	637	38.4	2,848	110	62.7
1927	8,037	4,838	12,875	4.1	23,434	1,699	762	25.9	475	26.2	2,409	117	45.9
Southern Pac.--Pac. Lines.1928	37,905	28,911	66,816	5.5	25,249	1,922	679	21.7	552	41.2	4,219	116	72.8
1927	34,771	31,406	66,177	5.1	23,567	1,875	688	22.5	545	38.9	4,121	121	68.1
Union Pacific 1928	22,166	8,451	30,617	10.9	38,070	2,165	809	20.3	878	62.6	7,237	104	79.3
1927	23,266	8,161	31,427	13.7	35,894	2,130	843	19.9	699	45.9	5,912	108	57.0
Southwestern Region:													
Gulf, Colo. & S. Fe....1928	9,581	4,334	13,915	3.2	28,282	1,964	849	26.9	513	30.5	3,691	95	58.2
1927	9,378	6,414	15,792	4.2	27,818	1,963	849	27.9	558	33.1	4,554	98	69.7
Mo.-Kans.-Tex. Lines....1928	16,870	6,078	22,948	6.8	28,456	1,983	752	22.8	445	33.4	3,214	92	59.9
1927	16,219	6,916	23,135	6.7	26,660	1,966	725	22.5	443	34.6	3,225	98	58.5
Missouri Pacific 1928	30,047	19,146	49,193	6.3	24,735	1,714	693	24.0	597	39.4	3,954	121	72.1
1927	29,483	21,220	50,703	4.6	20,383	1,641	706	24.3	582	35.4	4,030	128	74.9
St. Louis-San Francisco..1928	22,809	8,858	31,667	3.6	19,906	1,441	578	24.4	472	32.2	3,000	143	58.5
1927	22,203	11,079	33,282	3.4	19,325	1,464	601	24.3	479	31.1	3,282	147	60.6
Texas & New Orleans...1928	12,145	13,854	25,999	5.8	18,525	1,222	485	23.3	484	32.5	2,672	102	75.3
1927	11,214	15,400	26,614	6.2	19,021	1,339	560	25.0	563	34.8	3,281	101	87.0
Texas & Pacific....1928	6,707	10,383	17,090	5.2	21,685	1,708	649	26.2	753	52.4	6,387	101	89.1
1927	6,078	6,163	12,241	4.3	20,462	1,605	591	22.4	595	43.7	3,729	108	70.2

News of the Week

(Continued on page 165)

September 2, under the direction of the Industrial Department of the Y. M. C. A. Among those who will make addresses are R. N. VanDoren, vice-president and general counsel of the Chicago & North Western and W. N. Doak, of the Brotherhood of Railroad Trainmen. A conference on Pensions and Retirement Plans will be led by Frank Whiting, general claims attorney of the New York Central, and a railroad group conference will be led by Roy V. Wright, managing editor of the *Railway Age*.

The conference has been extended this year to cover four days and, in addition to addresses on important features of the human relations problem, will include sectional conferences, other than the above mentioned, on Personal Problems and Work Efficiency, The Foreman as a Personnel Developer, The Scientific Approach to Industrial Relations, and Economic Incentives. The industrial conference will be preceded by a special intensive course in industrial leadership August 21-29. Information about these conferences may be obtained from Fred H. Rindge, Jr., Industrial Department, National Council of Y. M. C. A.'s, 347 Madison Avenue, New York City.

Safety Contests on B. & M.

A safety program calling for a 35 per cent reduction in accidents in shops, on the road and at crossings will be opened August 1, on the Boston & Maine under the direction of Frank R. Bradford, newly appointed director of safety. The program contemplates safety contests between the various operating departments and between the five operating divisions. The reduction of accidents to employees will be stressed within the organization while the new safety department will also cooperate with outside agencies in educative methods looking to the elimination of other kinds of accidents.

A committee of officials has been appointed for general supervision of the work, while each division, terminal unit, yard and shop where large groups perform similar work, is to have a local committee.

Proposed Allotment of Express Agency Shares

Under the plan for the future conduct of the express business, published in the *Railway Age*, issue of July 21, the shares of stock of the proposed Railway Express Agency, Inc., will be allotted to participating carriers according to the table which follows. The allotment is based on the relation which the express business of the individual roads bore to the total express business over all participating lines, the table being computed upon the average for the years 1923, 1924, 1925 and 1926.

	Percentages	Shares of Stock
New York Central	14.426	144
Pennsylvania	12.608	126
Atchison, Topeka & Santa Fe	4.608	46
Southern Pacific	4.469	45
New York, New Haven & Hartford	4.402	44
Baltimore & Ohio	3.869	39
Chicago & North Western	3.288	33
Illinois Central	2.864	29
Chicago, Burlington & Quincy	2.670	27
Chicago, Milwaukee, St. Paul & Pacific	2.647	26
Erie	2.549	25
Union Pacific	2.532	25
Boston & Maine	2.290	23
Chicago, Rock Island & Pacific	2.230	22
Louisville & Nashville	2.021	20
Missouri Pacific	1.989	20
Atlantic Coast Line	1.956	20
Seaboard Air Line	1.586	16
Great Northern	1.468	15
St. Louis-San Francisco	1.404	14
Delaware, Lackawanna & Western	1.369	14
Reading	1.246	12
Wabash	1.229	12
Missouri-Kansas-Texas	1.173	12
Northern Pacific	1.172	12
Central of New Jersey	1.070	11
Chesapeake & Ohio	1.016	10
Lehigh Valley	.995	10
Norfolk & Western	.853	9
Pere Marquette	.709	7
Richmond, Fredericksburg & Potomac	.668	7
Texas & Pacific	.655	7
Canadian National	.647	6
Central of Georgia	.621	6
Minneapolis, St. PaPul & Sault Ste. Marie	.605	6
Florida East Coach	.598	6
Chicago & Alton	.573	6
Denver & Rio Grande Western	.545	5
Chicago & Eastern Illinois	.545	5
Delaware & Hudson	.483	5
Maine Central	.474	5
New York, Chicago & St. Louis	.417	4
Nashville, Chattanooga & St. Louis	.414	4
St. Louis Southwestern	.371	4
Chicago Great Western	.368	4
Colorado & Southern	317	3
Chicago, Indianapolis & Louisville	.311	3
Kansas City Southern	.289	3
Western Pacific	.236	2
Atlanta & West Point	.233	2
New York, Ontario & Western	.206	2
Minneapolis & St. Louis	.173	2
Northwestern Pacific	.142	1
Central Vermont	.139	1
Buffalo, Rochester & Pittsburgh	.130	1
Norfolk Southern	.123	1
Atlanta, Birmingham & Coast	.084	1
Western Maryland	.080	1
Bangor & Aroostock	.076	1
Wheeling & Lake Erie	.068	1
Virginian	.065	1
Duluth, South Shore & Atlantic	.063	1
Ann Arbor	.044	1
Ulster & Delaware	.043	1
Midland Valley	.039	1
Gulf, Mobile & Northern	.037	1
Clinchfield	.037	1
Bessemer & Lake Erie	.030	1
Chicago & Western Indiana	.027	1
New Orleans Great Northern	.025	1
Louisiana & Arkansas	.024	1
Winston-Salem Southbound	.021	1
Fort Smith & Western	.021	1
Denver & Salt Lake	.021	1
Trinity & Brazos Valley	.015	1
Detroit, Toledo & Ironton	.016	1
Georgia, Florida & Alabama	.014	1
Nevada Northern	.011	1
Buffalo & Susquehanna	.009	1
Huntingdon & Broad Top Mountain	.007	1
Lake Superior & Ishpeming	.005	1
Akron, Canton & Youngstown	.005	1
Canadian Pacific	.005	1
Cumberland & Pennsylvania	.005	1
Abilene & Southern	.004	1
Lehigh & New England	.002	1
	100.000	999

German System of Cost Finding to be Considered by I. C. C.

Commissioner Eastman of the Interstate Commerce Commission has issued a notice to all concerned that further hearings will be held early in the Fall in Ex Parte No. 91, General Revision of Accounting Rules for Steam Railroads, No. 14,700, Depreciation, Charges of Telephone Companies, and No. 15,100 Depreciation Charges of Steam Railroad Companies. Dates are to be announced later. It is the expectation that these will be the final hearings in the three proceedings and the notice says it is not probable that more than 30 days thereafter will be allowed for the filing of briefs. It is suggested, therefore, that the preparation of briefs should not be wholly deferred until after the final hearings.

Attached to the notice is a memorandum prepared by Director M. O. Lorenz of the Commission's Bureau of Statistics, describing the system of cost finding recently adopted by the German Reichsbahn Company, that operates the German railway system.

At the next hearing in Ex Parte No. 91 the information contained in this memorandum and such supplementary information in regard to this system of cost finding as may be obtained in the meantime will be incorporated in the record. The memorandum is being submitted at the present time to the parties in the proceeding in order that they may have an opportunity to give the matter attention prior to its presentation of record. "It may be of assistance," the notice says, "to the carriers in making the practical tests which they have agreed to make of the recommendations with respect to the revision of the railroad accounting system which have been offered in behalf of the committee representing the National Association of Railroad and Utilities Commissioners."

Joint Rail-Air Service to Northwest Planned

Through arrangements between the Great Northern, the Northern Pacific, the Chicago, Milwaukee, St. Paul & Pacific, the Northwest Airways, Inc., and the Transcontinental Air Transport, Inc., co-ordinated rail-air service between Chicago and the Northwest is to be established. The new service, which provides for the transportation of passengers by airplane between Chicago and Minneapolis, Minn., and St. Paul, is expected to be inaugurated about August 15.

Under the proposed schedule, westbound planes will leave Chicago at 3 p.m., standard time, making close connection with important trains from the east, and arrive at St. Paul at 7 p.m. and at Minneapolis at 7:10 p.m. to connect with westbound trains on the Great Northern, the Northern Pacific and the St. Paul. Eastbound, the planes will leave Minneapolis at 8:30 a.m. and St. Paul at 8:40 a.m., connecting with through trains from the west having morning arrivals at the Twin Cities, and will arrive at Chicago to connect with early afternoon trains for the east. This schedule will result in a saving of nearly a day on through travel between the east and the west.

The air service will be operated by the Northwest Airways, which holds the air mail contract covering the route between Chicago and the Twin Cities. An interest in this company has been acquired by the Transcontinental Air Transport, Inc., the company in which the Pennsylvania is interested. New planes having a capacity for eight passengers and a cruising speed of 120 m.p.h. have been ordered for the service. The joint operation will be supervised by a committee consisting of E. E. Nelson, passenger traffic manager of the Northern Pacific; G. B. Haynes, passenger traffic manager of the Chicago, Milwaukee, St. Paul & Pacific; E. H. Wilde, general passenger agent of the Great Northern; Colonel Paul Henderson, vice-president and general manager of the Transcontinental Air Transport; and Colonel L. H. Brittin, vice-president of the Northwest Airways.

Colonel Charles Lindbergh, chairman of

the technical committee of the Transcontinental company, will be an ex-officio member of this committee.

Reservations in the planes will be handled by railway agents in all parts of the country through the offices of the Northwest Airways at Chicago and St. Paul, and through tickets for the rail and air transportation will be sold. It is reported that the extra fare for the air service between Chicago and the Twin Cities will be $45, including transportation between railroad stations and the airports.

Government Protests Coal Rate

The United States government, through W. H. Quigg, acting co-ordinator for traffic, has filed with the Interstate Commerce Commission a protest asking the commission to suspend tariffs filed by the Chesapeake & Ohio, Norfolk & Western and Virginian, increasing the rates on coal from mines on their lines to Washington, D. C., when for delivery on the tracks of the Pennsylvania, from $2.84 to $3.13 a ton. The tariffs were filed by the railroads to equalize the rate with that for delivery on the tracks of the Baltimore & Ohio, following a decision in which the commission ordered the removal of the discrimination involved in the disparity of rates. Many protests have been filed by local dealers and consumers of coal, as well as by coal operators' associations, because the railroads raised the lower rate instead of reducing the higher one. Mr. Quigg's protest says the increase will add approximately $69,600 to the freight bill on the coal purchased by the federal government for use in Washington and vicinity.

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 185 Steam Railways, Including 16 Switching and Terminal Companies.

FOR THE MONTH OF MAY, 1928 AND 1927

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1928	1927	1928	1927	1928	1927	1928	1927	1928	1927
Average number of miles operated	240,117.12	239,039.16	59,399.04	59,453.20	5,627.81	5,616.14	40,130.82	39,725.05	134,959.45	134,244.77
Revenues:										
Freight	$391,116,109	$391,298,786	$175,100,733	$176,732,064	$19,581,713	$21,542,524	$51,315,128	$54,517,882	$145,118,535	$138,506,316
Passenger	a70,302,326	b78,579,853	37,135,513	41,270,121	1,312,144	1,670,086	8,703,953	9,736,155	23,150,716	25,903,491
Mail	8,025,591	7,940,941	3,074,380	3,058,656	203,280	197,704	1,199,029	1,200,742	3,548,902	3,483,839
Express	12,678,428	12,155,180	5,625,327	5,284,202	252,461	249,314	1,706,841	1,788,460	5,093,799	4,833,204
All other transportation	17,710,319	17,873,577	10,332,216	10,308,266	195,243	202,430	977,625	1,041,826	6,205,235	6,321,055
Incidental	10,136,460	10,962,473	5,066,257	5,516,058	302,713	415,365	1,065,498	1,054,451	3,701,992	3,976,599
Joint facility—Cr.	1,103,278	1,134,825	413,791	436,865	11,837	16,261	157,822	146,267	519,828	535,432
Joint facility—Dr.	358,362	374,134	126,452	135,534	10,880	1,954	32,488	32,391	188,542	204,255
Ry. operat'g revenues	510,714,149	519,571,501	236,621,765	242,470,698	21,848,511	24,291,730	65,093,408	69,453,392	187,150,465	183,355,681
Expenses:										
Maintenance of way and structures	79,354,767	80,798,436	31,812,582	32,627,370	3,150,702	3,633,524	9,359,460	10,542,017	35,032,023	33,995,525
Mainten'ce of equipm't	99,651,969	102,254,513	46,260,691	48,471,127	4,521,783	5,041,921	13,371,561	13,786,488	35,497,934	34,954,977
Traffic	10,624,244	10,403,905	3,873,534	3,823,658	279,883	273,338	1,694,123	1,750,962	4,776,704	4,555,947
Transportation	172,780,660	178,657,109	81,215,386	84,947,875	5,528,350	6,134,283	22,603,976	24,216,717	63,432,948	63,358,234
Miscellaneous operat'ns	4,593,077	4,576,418	2,154,802	2,166,716	82,779	86,185	481,196	474,902	1,874,300	1,848,615
General	16,325,062	16,174,609	7,284,235	7,280,952	600,232	573,055	2,113,952	2,104,050	6,326,643	6,216,552
Transportation for investment—Cr.	1,493,493	1,312,601	303,149	233,859	22,899	46,600	68,501	93,315	1,098,944	938,827
Ry. operat'g expenses	381,836,286	391,552,389	172,298,081	179,083,839	14,140,830	15,695,706	49,555,767	52,781,821	145,841,608	143,991,023
Net revenue from railway operations	128,877,863	128,019,112	64,323,684	63,386,859	7,707,681	8,596,024	15,537,641	16,671,571	41,308,857	39,364,658
Railway tax accruals	30,757,179	32,199,152	13,385,857	13,878,646	1,646,350	1,777,763	4,097,889	4,316,530	11,627,083	12,226,213
Uncollectible ry. rev's	117,099	139,143	51,913	55,290	1,907	8,082	26,232	20,194	37,047	55,577
Ry. operating income	98,003,585	95,680,817	50,885,914	49,452,923	6,059,424	6,810,179	11,413,520	12,334,847	29,644,727	27,082,868
Equip't rents—Dr. bal.	7,687,785	7,522,990	4,159,363	4,343,346	d454,804	d488,352	623,085	623,818	3,360,141	3,044,178
Joint facility rent—Dr. balance	2,132,635	2,145,337	1,167,715	1,010,641	108,251	98,179	56,762	111,500	799,907	925,017
Net railway operating income	88,183,165	86,012,490	45,558,836	44,098,936	6,405,977	7,200,352	10,733,673	11,599,529	25,484,679	23,113,673
Ratio of expenses to revenues (per cent)	74.77	75.36	72.82	73.86	64.72	64.61	76.13	76.00	77.93	78.53

FOR FIVE MONTHS ENDED WITH MAY, 1928 AND 1927

Average number of miles operated	239,812.08	238,902.24	59,357.01	59,453.06	5,622.86	5,616.67	40,045.41	39,646.62	134,786.80	134,185.89
Revenues:										
Freight	1,818,396,569	1,881,841,906	792,775,620	844,284,749	90,728,583	103,898,604	251,638,738	267,313,943	683,253,628	666,344,610
Passenger	c359,759,029	e392,870,448	185,576,553	197,452,125	7,178,307	8,649,228	50,817,816	56,842,726	116,186,353	129,926,369
Mail	39,520,930	39,349,674	14,936,683	14,962,408	1,059,147	1,032,246	5,934,026	5,887,968	17,591,074	17,467,052
Express	54,505,778	55,720,130	24,691,735	26,166,929	1,239,022	1,290,273	8,034,333	7,724,926	20,540,688	20,538,002
All other transportation	82,380,396	84,299,066	46,137,635	47,015,196	952,938	1,051,364	5,151,336	5,558,253	30,138,487	30,674,253
Incidental	46,131,354	49,868,867	23,465,208	25,383,246	1,579,307	2,019,629	5,837,723	6,102,581	15,249,116	16,363,411
Joint facility—Cr.	5,527,412	5,620,984	2,166,037	2,291,120	65,478	70,929	695,776	725,280	2,600,121	2,533,655
Joint facility—Dr.	1,838,829	2,075,438	654,260	675,538	20,690	11,568	156,111	169,313	1,007,768	1,219,019
Ry. operat'g revenues	2,404,382,639	2,507,495,637	1,089,095,211	1,156,880,235	102,782,092	118,000,705	327,953,637	349,986,364	884,551,699	882,628,333
Expenses:										
Maintenance of way and structures	329,036,958	344,191,379	134,211,885	142,097,638	14,943,810	16,106,906	45,528,419	50,031,040	134,352,844	135,955,795
Mainten'ce of equipm't	489,132,159	519,662,160	227,993,084	249,483,926	22,691,760	25,198,710	65,433,394	68,305,857	173,013,921	176,673,667
Traffic	51,552,967	49,681,892	19,093,732	18,178,344	1,335,855	1,294,596	8,840,469	8,810,937	22,282,911	21,398,015
Transportation	863,413,172	911,085,294	406,080,668	435,738,369	28,026,468	31,263,989	115,347,507	124,140,108	313,958,529	319,942,828
Miscellaneous operat'ns	22,419,973	22,722,751	10,592,834	10,683,062	424,688	445,581	2,857,425	2,922,684	8,545,026	8,671,424
General	80,864,471	80,281,497	36,003,624	36,431,560	3,049,495	2,773,448	10,486,623	10,527,489	31,324,729	30,549,000
Transportation for investment—Cr.	5,839,830	5,352,982	880,825	998,063	157,017	139,080	438,885	718,026	4,363,103	3,497,813
Ry. operat'g expenses	1,830,579,870	1,922,271,991	833,095,002	891,614,836	70,315,059	76,944,150	248,054,952	264,020,089	679,114,857	689,692,916
Net revenue from railway operations	573,802,769	585,223,646	256,000,209	265,265,399	32,467,033	41,056,555	79,898,685	85,966,275	205,436,842	192,935,417
Railway tax accruals	150,325,151	153,246,783	61,359,692	62,277,510	8,338,932	8,926,315	21,046,719	21,002,887	59,579,808	61,040,071
Uncollectible ry. rev's	551,545	647,983	266,326	261,166	9,033	20,586	88,723	99,844	187,463	266,387
Ry. operating income	422,926,073	431,328,880	194,374,191	202,726,723	24,119,068	32,109,654	58,763,243	64,863,544	145,669,571	131,628,959
Equip't rents—Dr. bal.	36,922,735	35,844,383	20,080,545	20,032,310	d2,488,477	d2,288,600	3,673,976	4,394,558	15,656,691	13,706,115
Joint facility rent—Dr. balance	9,975,520	10,413,229	5,162,850	5,075,133	571,115	516,172	212,708	443,893	4,028,847	4,378,031
Net railway operating income	376,027,818	385,071,268	169,130,796	177,619,280	26,036,430	33,882,082	54,876,559	60,025,093	125,984,033	113,544,813
Ratio of expenses to revenues (per cent)	76.14	76.66	76.49	77.07	68.41	65.21	75.64	75.44	76.78	78.14

a Includes $3,192,608 sleeping and parlor car surcharge. b Includes $3,237,200 sleeping and parlor car surcharge. c Includes $15,875,770 sleeping and parlor car surcharge. d Deficit or other reverse items. e Includes $16,069,556 sleeping and parlor car surcharge.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Traffic

The Public Service Commission of Oregon has granted the Malheur Railroad permission to suspend operation of its railroad as a common carrier between Burns, Ore., and Seneca until December 31.

The Interstate Commerce Commission has announced a series of hearings before Examiners Money and Esch in connection with its investigation of rates on cottonseed, cottonseed products and related articles, Part 8 of its general rate structure investigation and various formal cases relating to rates on these products. Hearings have been assigned for September 17 at Atlanta, Ga., October 11 at Biloxi, Miss., October 22 at Dallas, Tex., November 12 at Chicago, and November 19 at New York.

The Arkansas Railroad Commission on July 18 issued an order suspending increased freight rates, which railroads within the state had published to become effective July 28, until such time as a hearing can be conducted to determine if the rates are discriminatory. The proposed intrastate rates are based on interstate rate increases allowed by the Interstate Commerce Commission in the Southwestern consolidated rate cases. The federal commission left the adjustment of intrastate rates to the various state commissions.

Reports of commodity committees of the Pacific Northwest Advisory Board presented at a meeting held at Seattle, Wash., on June 8 show that car requirements for the third quarter will be 5.4 per cent above the requirements for the same period in 1927 in Northern Idaho, Oregon and Washington. In the third quarter of 1927, 364,760 cars were loaded and it is estimated that 384,505 will be needed this year. It is estimated that fresh fruit shipments will call for 17,754 cars or 67 per cent more than in 1927. The car requirements of other commodities which are expected to show a substantial increase in needs, with the percentage over 1927, are: automotives, 855 cars, 538 per cent; dairy products, 1,002 cars, 116 per cent; metal mines and smelters, 6,355 cars, 51 per cent; paper products and pulp, 3,003 cars, 67 per cent; lumber and forest products, 203,544 cars, 4 per cent.

Compromise Lake Cargo Tariffs Filed

Tariffs designed to make effective the compromise on lake cargo coal rates recently agreed upon by the executives of the railroads serving the northern and southern coal districts, on the basis of a 35-cent differential between the rates from West Virginia and Kentucky and those from Pennsylvania, Ohio, and northern West Virginia to the Lake Erie ports, have now been filed with the Inter-Chesapeake & Ohio, Louisville & Nashville and Chesapeake & Ohio.

The rates from the southern district are now 45 cents a ton over those from the northern district, as the result of a reduction of 20 cents a ton in the northern rates ordered by the commission, a 20 cent reduction made by the southern roads which the commission attempted to prevent, and a further 20 cent reduction made the northern roads. The new tariffs increase the southern rates by 10 cents a ton, with a provision that the increase shall be refunded on all shipments made up to and including December 31. On that day the refund provision will expire by tariff limitation and at the same time the northern rates will go up 20 cents a ton, as the present tariffs also expire by limitation at the end of the year.

Board Meetings in September

The following board meetings have been scheduled for September. Southeast Shippers Advisory Board on September 7 at Biloxi, Miss.; Allegheny Regional Advisory Board on September 13 at Cumberland, Md.; Ohio Valley Regional Advisory Board on September 18 at Louisville, Ky.; Trans-Missouri-Kansas Shippers Advisory Board on September 19 at Joplin, Mo.; and Pacific Coast Transportation Advisory Board on September 21 at Los Angeles, Cal.

Cancellation of Barge and Rail Rates Not Approved

The Interstate Commerce Commission has found not justified tariffs filed by the Louisville & Nashville, the Southern, the Atlanta & West Point, the Central of Georgia and the Western of Alabama, proposing to withdraw from participation in the joint barge-and-rail rates on sugar in carloads, from New Orleans, La., and points contiguous thereto, and from Mobile, Ala., to destinations in Alabama, Georgia, Tennessee and Kentucky, via the barge line of the Inland Waterways Corporation to Tuscaloosa and Birmingham, Ala., and Memphis, Tenn., and the rail lines beyond, when such sugar has been accorded storage in transit by the barge line at the points of interchange. The rail lines took the position that the storage arrangement nulifies and overcomes the disadvantage in time of the barge line and removes the necessity for any differential basis of rates, and that the slower service of the barge line is a positive advantage to the shipper in that by the existing transit arrangement free storage is accorded during the period of the water transportation.

Commissioner Brainerd, in a concurring opinion, said that while the rail carriers have asked the commission to approve the removal of an injustice to themselves, the method which they have chosen for its removal is unjust because they seek to leave combination rates in effect very much higher than the present all-rail joint rates and that their request was not accompanied by reasonable proportional rates from the transit points, or other appropriate relief.

Equipment and Supplies

Locomotives

The Buenos Ayres & Pacific (Argentine) is inquiring through the builders for 8 Mikado type locomotives.

The Hu Len Hei Lun (China) is inquiring through the builders for 5 Mikado type locomotives.

The F. C. Cochabama Santa Cruz (Bolivia) has ordered 2 Mikado type locomotives from the American Locomotive Company.

The North Western Railway of India, has given an order to the General Electric Co., Ltd., London, England, for 2 Diesel-electric locomotives. The locomotives are of the 0-4-4-0 type, comprising a power unit on the main frame carried on two four-wheel bogies, the weight of each locomotive being approximately 50 tons when fully loaded. Each locomotive will be equipped with a six-cylinder 350 b. hp. high speed oil engine, manufactured by William Beardmore & Co., Ltd., Glasgow, coupled to a 200 kw. dc. generator feeding four axle-hung traction motors rated each at 85 b. hp. on the one hour rating at 600 volts. A driver's compartment is provided at each end of the locomotive, the electrical control equipment and brake valves being duplicated.

Freight Cars

The Missouri Pacific is inquiring for 100 automobile cars of 50-ton capacity and a length of 50 ft. 6 in.

The Illinois Central has ordered two air-dump cars from the Western Wheeled Scraper Company. Inquiry for this equipment was reported in the *Railway Age* of June 9.

The Cincinnati, Hamilton & Dayton has ordered 6 Hart convertible ballast cars from the American Car & Foundry Company.

The Fruit Growers Express has ordered 100 steel underframes for refrigerator cars, from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of July 7.

Passenger Cars

The Northern Pacific is inquiring for one business car.

The Southern Pacific is inquiring for 4 gas-electric rail motor cars.

The Chilean State Railways will receive bids on November 23, at 225 Broadway, New York, or at Santiago, Chile, for 20 coaches and 6 sleeping cars. Specifications and drawings will be available at the New York office on August 1.

Supply Trade

J. E. Ham has been appointed railroad sales engineer of the **Simplex Wire & Cable Company** with headquarters at Chicago instead of J. E. Hahn as reported in the *Railway Age* of July 14.

The Line Material Company, South Milwaukee, Wis., manufacturer of electrical transmission and distribution specialties, has appointed the **A & H Corporation,** Chicago, as its representative in middle western territory.

Fred Johnson, district manager of the **Wagner Electric Company** with headquarters at St. Louis, has been appointed manager of the Los Angeles, Cal., office. **Alex Miltenberger,** Pacific Coast manager with headquarters at San Francisco has been transferred to St. Louis as branch manager of the St. Louis office.

Louis Schlesinger, president of the **Bradley Washfountain Company,** Milwaukee, Wis., has resigned following the acquisition of his interests by **H. A. Mullet,** who has been elected president. **G. W. Grossenbach** has been elected vice-president. **R. H. Weims** has been elected treasurer and **E. S. Wetherall** has been elected secretary.

A. C. Cronkrite, division sales manager for the **Universal Portland Cement Company,** Chicago, has been appointed assistant general sales manager. **Edward Quebbeman,** division sales manager for Illinois and Missouri, has been appointed western sales manager, with office at Chicago. **W. L. Greenly,** division sales manager at Duluth, Minn., has been transferred to the Chicago district. **Harry A. Craig,** representative at Detroit, Mich., has been appointed division sales manager for Illinois and Missouri. **Earle D. McKay,** field engineer for the service bureau at Minneapolis, Minn., has been appointed division sales manager at Duluth.

John B. Tinnon has been appointed manager of sales of the Thermit department of the **Metal & Thermit Corporation,** effective August 1, succeeding **W. R. Hulbert,** resigned. Mr. Tinnon was educated at Vanderbilt University and in 1908 began railway work in the engineering department of the Chicago City Railway Company. He served as assistant engineer during the rehabilitation of the property and in 1912 was appointed engineer of way of the Chicago & Joliet Electric Railway, which position he held until 1918, when he served in the Ordnance department of the U. S. Army. In 1919 he returned to the Chicago & Joliet Electric Railway as chief engineer and in 1924 he became connected with the Metal & Thermit Corporation as manager of the rail welding department. Mr. Hulbert, who is succeeded by Mr. Tinnon, has resigned in order to enter the firm of Thomas H. & Milan H. Hulbert, Chicago, on August 1 at No. 6 North Michigan avenue. Mr. Hulbert was graduated from Columbia University in 1904 with the degree of mechanical engineer. He was then connected in succession with the Power & Mining Machinery Company, the Rand Drill Company (now the Ingersoll-Rand Company) and the Kobbe Company, of New York. While with the latter company, he acted as managing editor of Compressed Air which was being published by them at that time. In 1907 he entered the employ of the Goldschmidt Thermit Company as assistant engineer; when the Metal & Thermit Corporation was formed in 1916, he was made sales manager of the Thermit department.

R. E. J. Summers, chief contracting engineer of the **H. K. Ferguson Company,** international engineers and builders, with headquarters at Cleveland, Ohio, has been promoted to vice-president in charge of contracts. Mr. Summers has been associated with the company since 1919, having served consecutively as assistant chief engineer, chief engineer and chief contracting engineer. Some of this time he spent in Japan, where the company maintains a branch office at Tokyo; other branch offices of the company are maintained in New York and Detroit. Mr. Summers was graduated as a civil engineer from Cornell University in 1914. He formerly was employed as an engineer on design for the McClintic-Marshal Company of Pittsburgh. He was field engineer on erection of the Sciotoville bridge of the Chesapeake & Ohio, and in the World War, served as a captain of engineers with the A. E. F. during which time he supervised engineering and construction projects.

L. E. Hassman has been appointed district sales manager of **The Q and C Company,** with headquarters at St. Louis, Mo. He received his education in the public schools and in the Friends Central School, Philadelphia. All of his railroad service was with the Illinois Central, entering the employ of this company as machinist apprentice, he served successively as machinist, and draftsman, Chicago; roundhouse foreman, Carbondale, Ill; general foreman, East St. Louis, and in February, 1906, was appointed master mechanic at Clinton, Ill. In February, 1912, he left railroad service, to go with the railroad sales department of the Johns-Manville Company, with headquarters at New Orleans. In February, 1917, he was appointed southwestern representative of Brown & Company, Inc., at St. Louis, where he remained until they retired from business in June, 1924. Mr. Hassman then entered the service of the Ulster Iron Works in the same capacity, with headquarters at St. Louis, remaining with that company until his recent appointment with The Q and C Company.

L. E. Hassman

Raymond E. Miller, assistant chief engineer of the **Westinghouse Air Brake Company,** Wilmerding, Pa., has been appointed general engineer of the company, succeeding the late **F. H. Parke.** Mr. Miller has been connected with the Westinghouse Air Brake organization for the past 22 years. He entered the company's service as a special apprentice immediately after his graduation as electrical engineer from the Michigan University in 1906. During the succeeding years he advanced rapidly from one position to another until he was appointed assistant chief engineer in 1926. His work has largely been devoted to air brake trials and tests, of newly developed air brake improvements in their practical application.

Raymond E. Miller

Obituary

R. C. Phillips, secretary of the American Rolling Mill Company, with office at Middletown, Ohio, died in that city on July 11. Mr. Phillips had been secretary of the company since 1899, and at the time of his death was 63 years of age.

Frederick Winters Griffith, president, treasurer and a director of the Garlock Packing Company, Palmyra, N. Y., died on July 11, at his California home in Pasadena, in his seventieth year. Mr. Griffith was born at Phelps, N. Y., and was graduated from Hamilton College with an A. B. Degree. He was one of the founders of the company and has helped supervise its activities for over a period of 40 years.

Construction

BALTIMORE & OHIO CHICAGO TERMINAL.—A contract for the construction of the substructure of a single-leaf bascule bridge over the relocated channel of the Chicago river at Sixteenth street, Chicago, has been let to the Bates and Rogers Construction Company, Chicago. The contract for the erection of the bridge proper has been let to the Mt. Vernon Bridge Company, Mt. Vernon, Ohio. The total cost of this bridge, which will replace the present bridge over the Chicago river at Taylor street, without interlocking, will be about $500,000.

BALTIMORE & OHIO.—The Illinois Commerce Commission has approved the plans of St. Clair County, Ill., for the construction of a highway subway under the tracks of this railroad at Kings highway, Fairmount City, Ill., at a total cost of $400,000, a portion of which will be borne by the railroad. Property owners of East St. Louis, Ill., have filed an intervening petition with the commission asking that the grade separation project be located a mile west at Fortieth street.

DELAWARE, LACKAWANNA & WESTERN.—This road contemplates the erection of a series of warehouses in Jersey City, N. J. Preliminary plans for the work which is expected to cost approximately $10,000.000, are now in preparation.

KANSAS CITY SOUTHERN.—Bids will close on July 28 for the grading and construction of a line between Grandview, Mo., and Leeds, a distance of 13 miles. Included in this work for which a contract will be let at this time are 350,000 cu. yd. of rock excavation, 529,000 cu. yd. of common excavation, 130,000 cu. yd. of borrow, 200,000 cu. yd. of earth excavation, the laying of 4,700 ft. of drain pipe, the placing of 10,700 cu. yd. of concrete and the erecting of 1,220 tons of structural steel. Company forces will be employed in ballasting and track laying work.

MISSOURI PACIFIC.—A contract has been awarded to the Ozark Engineering Company, Joplin, Mo., for the construction of a viaduct at Lincoln avenue in Little Rock, Ark.

MISSOURI SOUTHERN.—This company contemplates the construction of an extension from a point near Bunker, Mo., west toward the Current river, about 12 miles, to provide an outlet for a section of virgin timber. The cost of the construction is estimated at $18,000 per mile.

NEW YORK, NEW HAVEN & HARTFORD.—Contracts have been awarded by this road to H. R. Kent & Co., Rutherford, N. J., for work in connection with the revision of heating plants at Van Nest, N. Y., and Harlem River, N. Y. The former is expected to cost approximately $140,000 and the latter about $60,000.

NEW YORK CENTRAL—This company plans extensive improvements to the docks of the Ohio Central at Toledo, O. The present concrete bulkhead is to be extended 2,500 ft. Approximately 250,000 cu. yd. of fill will be made and additional load and empty car yards will be built. An all-electric coal dumping machine will also be installed. The contract for the extension of the bulkhead and the hydraulic filling has been awarded to the Newton-Baxter Company of Toledo, O.

NORTHERN PACIFIC.—A contract has been awarded to the Industrial Contracting Company, South Minneapolis, Minn., for the construction of a highway subway under the tracks of this company at Hawley, Minn. The cost of this project is estimated at $25,000.

ST. LOUIS-SAN FRANCISCO (Muscle Shoals, Birmingham & Pensacola).—A contract for the construction of a passenger station at Pensacola, Fla., has been let to the W. Horace Williams Company, New Orleans, La., at a cost of about $100,000.

ST. LOUIS SOUTHWESTERN.—This company expects to apply to the Interstate Commerce Commission immediately for permission to construct a line between Gideon, Mo., and Deering, 20 miles, and another line between Hornersville, Mo., and Leachville, Ark., 11 miles. The Gideon-Deering line is designed to provide a connection between the Gideon & North Island and the Deering Southwestern while the Hornersville-Leachville line will connect the Paragould Southeastern with the Blytheville, Leachville & Arkansas Southern. The Cotton Belt connects with the Gideon & North Island at Malden, Mo., with the Deering Southwestern at Hornersville and with the Paragould Southeastern at Jonesboro, Ark.

TEXAS & PACIFIC.—A contract for the construction of a reinforced concrete and steel grade separation structure over Hotchkiss street at Shreveport, La., has been let to T. P. Johnson, Dallas, Tex., at a cost of about $30,000.

TEXAS CITY TERMINAL.—The general engineering and construction contract for improvements to rail and water facilities at Texas City, Tex., which are estimated to involve an expenditure of about $2,000,000, has been let to the James Stewart Corporation, Chicago. This will include the remodeling of the grain elevator headhouse and the construction of a 900-ft. grain conveyor which will extend from the headhouse to the docks. A contract has been awarded to John Jacobson, Texas City, for the construction of the foundation for a warehouse which will have outside dimensions of 120 ft. by 1,160 ft. and for the construction of the dock apron, which will be 23 ft. wide and 1,200 ft. long. It is expected that bids for the construction of the warehouse superstructure will be requested before September 1.

TORONTO TERMINALS.—The construction of an express and office building for the use of the Canadian Pacific at Toronto, Ont., for which bids were asked early in July is being held in abeyance temporarily and it is unlikely that work on this project will be undertaken during the year of 1928.

UNION PACIFIC.—The general contract for the construction of a 12-story reinforced concrete, brick and steel addition to the office building at Fifteenth and Dodge streets, Omaha, Neb., has been let to John Lof & Sons, Omaha.

UNION PACIFIC.—The general contract for the construction of terminal facilities at Gering, Neb., in connection with the start of operation of the North Platte extension has been let to Thomas J. Allen, Scotts Bluff, Neb. The buildings and facilities to be constructed under this contract include a brick and concrete five stall engine house, a one-story boiler room having outside dimensions of 26 ft. by 34 ft., a one-story machine shop having outside dimensions of 25 ft. by 74 ft., a coal bin, a store room, a boiler wash-out system building, an oil pump house and foundations for a coaling station and a cinder hoist. The total cost of the projected construction at Gering is $331,000.

WABASH.—The general contract for the construction of a fruit exchange building at Second and Carr streets, St. Louis, Mo., has been let to the Boaz-Kiel Construction Company, St. Louis. The administration portion of the building will be three stories high with outside dimensions of 82 ft. by 140 ft. and the fruit display and storage section will be one story high with outside dimensions of 56 ft. by 640 ft. Both portions of the building will be constructed of reinforced concrete and brick. The total cost is estimated at $850,000.

WESTERN PACIFIC.—The Western Pacific-California, recently incorporated as a subsidiary of the Western Pacific, has applied to the Interstate Commerce Commission for certificates authorizing the construction of a 25-mile line from San Francisco to Redwood City, Calif., and a line of 138 miles from a connection with the Western Pacific at Nilegarden to Kings River, via Fresno, Calif., including trackage rights over the Tidewater Southern between Shoemake and Hilmar, 12 miles. The Western Pacific also asked authority to build a branch from Brack to a point beyond Boyce Road, 3½ miles, and the Sacramento Northern to extend its Holland branch from a point near the Southern line of Yolo county to Ryde, 7¾ miles. The Western Pacific also filed an application for authority to acquire control of the new California company by purchasing its capital stock as it may be issued, stating it proposes to advance immediately $275,000 toward financing the construction plans.

C. & O. to Spend $21,000,000 for New Construction

A construction program involving proposed expenditures totalling more than $21,000,000 has been authorized by the board of directors of the Chesapeake & Ohio. The work is to be done at various points on the road.

At Huntington, W. Va., work which is estimated to cost $9,635,000 is planned. This includes a $5,900,000 authorization for additional main tracks, a $3,500,000

extension to the locomotive repair shops and a $235,000 addition to the hospital. An expenditure of $3,160,000 is authorized for a new freight car repair shop yet to be located while approximately $2,300,000 is to be spent on the construction of a new engine terminal and other improvements at Cincinnati, Ohio.

Second track, planned in various localities, is expected to cost $1,300,000, while $1,260,000 is the estimated cost of additional shop improvements and tracks at Hinton, W. Va.

At Richmond, Va., there is $1,000,000 authorized also for additional shop improvements while a like expenditure for similar work at Clifton Forge, Va., is planned.

Various other improvements including depots, elimination of grade crossings, additional tracks, etc., are expected to cost the $989,724 which makes up the total authorization of $21,144,724.

Work will proceed as soon as permission is obtained from the Interstate Commerce Commission to capitalize past expenditures for improvements for the purpose of reimbursing the company's treasury.

Montreal Union Station Project

A big union terminal project for the city of Montreal is now being developed and before the end of the present year may assume final form.

For the past four or five years the Canadian National's Bonaventure station has been admittedly inadequate for its growing business.

Recently elaborate plans for expansion of the present terminal facilities at the city end of the two-mile mountain tunnel, originally built by the former Canadian Northern, were submitted to the city authorities.

Study has also been given by the Canadian Pacific to the possible need in the near future of larger facilities at their already capacious Windsor Street terminal, and a report has been prepared and submitted by a consulting railroad engineer.

Recently, however, the federal government took a hand in the situation and the Minister of Railways, Hon. Charles A. Dunning, decided to ask Frederick Palmer, a London engineer and expert on terminal questions, to make a study of the problem with a view, if possible, of getting a joint terminal that would serve both the Canadian Pacific and Canadian National.

Mr. Palmer was in Montreal last week and will return in September to spend a month on the question. Hope is expressed in federal circles at Ottawa that by that time there will be established a working agreement between the two big railways to make possible consideration of a joint terminal project.

In addition to the two roads mentioned the city of Montreal, the Montreal Tramways and the Montreal Harbor Commission are all affected in the scheme, and the outcome of the present negotiations may be the formation of a terminal company embracing the interests of all those concerned.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $14,691,000 of California-Arizona lines first and refunding mortgage bonds at not less than 97 and interest. The company had originally applied for authority to sell the bonds at par but now states that it does not believe it possible to sell them at par because of the decline in the prices of the bonds now outstanding. The application refers to the application for authority to acquire control of the Kansas City, Mexico & Orient and says the company will need cash for that purpose upon authorization by the commission.

ATCHISON, TOPEKA & SANTA FE.—*Acquisition of Orient.*—A hearing on this company's application for authority to acquire control of the Kansas City, Mexico & Orient by purchase of its stock at $414.50 per share was held at Washington on July 23 before Examiner H. C. Davis of the Interstate Commerce Commission and Clarence E. Gilmore, chairman of the Texas railroad commission. The only opposition was that of the New Orleans Joint Traffic Bureau, which intervened in opposition on the ground that the application contemplates an affiliation of competing lines. The Missouri Pacific, Fort Worth & Denver City, and Wichita Valley intervened asking the commission to impose a condition requiring that through routes via the Orient be maintained and that the "preferential" divisions of through rates accorded the Orient several years ago be abolished. Arthur Lovell, appearing on behalf of the Brotherhood of Locomotive Firemen & Enginemen and the Brotherhood of Railroad Trainmen, asked the commission to grant the application, saying it would benefit the train employees and that they had had difficulty in the past in obtaining adequate wages and working conditions. W. T. Kemper, president of the Orient, testified that the acquisition by the Santa Fe would be in the public interest because the latter could do things to develop the property which the Orient had been unable to do, and that he thought the price was fair to both buyer and seller. It was explained that the price per share merely represents a division of the fair price agreed upon by 35,000, the number of no-par shares proposed in the Orient's application to the commission pursuant to the plan of reorganization. C. Histed, vice-president and general counsel, described the vicissitutes of the Orient, saying it had never been able to earn enough to interest capital and that the only solution lay in its acquisition by a strong company. He said the commission had gone to greater lengths to keep the line in operation than in the case of any other railroad he knew of. F. B. Houghton, vice-president in charge of traffic of the Santa Fe, testified that as the natural flow of traffic is from the Orient to the Santa Fe the line would be a valuable feeder and, if its physical condition is improved, a cut-off in some instances. He said no announcement could be made as yet as to whether the Santa Fe would take up the original project and connect the Texas line with the Mexico properties but that it would have to make a study of the situation.

CHESAPEAKE & OHIO.—*See Louisville & Jeffersonville Bridge.*

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—*See Louisville & Jeffersonville Bridge.*

CHICAGO, BURLINGTON & QUINCY.—*Authorization to Operate Line.*—The Interstate Commerce Commission has authorized this company to acquire the terminal properties of the Leavenworth & Topeka at Leavenworth, Kan., 2.2 miles, the latter road to continue to use the facilities on a rental basis.

LOUISVILLE & JEFFERSONVILLE BRIDGE & RAILROAD.—*Control and Operation.*—The Interstate Commerce Commission has authorized the Cleveland, Cincinnati, Chicago & St. Louis to purchase additional capital stock in this company, to assume further liability in respect of $4,500,000 of 4 per cent first mortgage bonds of the bridge company and to operate over its lines. The Chesapeake & Ohio has been authorized to acquire by purchase from the bridge company a viaduct and other facilities and to operate over a portion of its line. The Chesapeake & Ohio has heretofore been a one-third owner, with the Big Four, two-third of this company's capital stock and a one-third guarantor of its bonds. These the Big Four now assumes, the C. & O. to use certain of the facilities hereafter on a rental basis. The bridge company plans the construction of a new bridge over the Ohio river to cost $3,464,000 to replace an existing structure.

MISSOURI-KANSAS-TEXAS.—*Hearing on Unification Application.*—The Interstate Commerce Commission has assigned this company's application for authority to acquire control of the Kansas City Southern and the St. Louis Southwestern or either of them, for hearing at Dallas, Tex., on September 17 before Director C. D. Mahaffie of its Bureau of Finance.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its Middle Tennessee & Alabama branch, from Fayetteville, Tenn., to Capshaw, Ala., 36 miles.

NEW YORK CENTRAL.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $42,158,300 of stock to be sold to its stockholders at not less than par ($100), the proceeds to be used to meet maturing bonds. Commissioner Eastman, concurring in part,

held that the stock should have been authorized for issue at a price above par.

PENNSYLVANIA.—*Lease of New York Terminal Properties.*—Testimony in support of the application to the Interstate Commerce Commission for authority to lease for 999 years the property of the Pennsylvania Tunnel & Terminal Railroad, the entire stock of which is owned by the Pennsylvania, was presented in a 15-minute hearing on July 24 before Examiner Sullivan. A. J. County, vice-president of the Pennsylvania, was the only witness. It was stated that the Pennsylvania has been operating the property since 1910 under temporary agreements extending for periods of eleven months and it is now deemed desirable that a more permanent arrangement be made for conducting the future operations of the property, in accordance with the company's policy to secure unity of operation and management of the properties of the system.

Asked to Explain Stock Purchases.—At a brief hearing on July 21 before Examiner Boles on the application for authority to issue $17,500,000 of additional stock, to be offered for subscription by officers and employees on a monthly payment basis, Mr. County was questioned by Thomas P. Healy, director of the commissions Bureau of Inquiry, as to whether the necessity for raising new capital was in any way connected with the recent purchase of stocks of the Wabash and Lehigh Valley, partly from the Delaware & Hudson and partly in the market. Mr. County said these purchases were not the occasion for the issue and that they had been made in the name of the Pennsylvania Company with the proceeds of direct bank loans under short term notes to the extent of approximately $81,500,000. Mr. Healy also asked as to any plans for the permanent financing of the stock purchases and when Mr. County said no formal plans have yet been made for ultimate financing and that the notes might be renewed he was asked to file a detailed statement showing how the stock purchases have been financed, the assets of the Pennsylvania and other similar information.

PENNSYLVANIA. — *Acquisition.* — This company has applied to the Interstate Commerce Commission for authority to acquire and operate the western end of the Ohio River & Western, from Zanesville to Lawton, Ohio, 9 miles, at a purchase price of $129,000. The line is now leased by the Pennsylvania.

PORT ANGELES WESTERN.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue not exceeding 16,438 shares of Common stock without par value, said stock to be disposed of either by sale or delivery at a price not less than $100 a share, the proceeds or delivery to be in payment for the purchase price of the railroad and of advances for additions and betterments.

PORT READING.—*Authorized to Operate Line.*—The Interstate Commerce Commission has authorized this company to operate a line approximately ½-mile long in South Bound Brook, N. J. The line is being built largely at the expense of an industry, which, according to the agreement, will be repaid for its advances by the railroad at a rate of $6 per car of freight it receives yielding $25 or more in revenue. Pending complete repayment of these advances the railroad will also pay 4 per cent interest on the unpaid balance. Originally it was intended to operate this solely as an industrial track for this one shipper, but the plan is now to operate it as a common carrier. Application by the Port Reading to acquire this line has not been filed.

ST. LOUIS-SAN FRANCISCO.—*Acquisition of Lines.*—The Interstate Commerce Commission has authorized this company to acquire and operate the Kansas City, Fort Scott & Memphis, the Kansas City, Memphis & Birmingham, the Kansas City, Clinton & Springfield, the Muscle Shoals, Birmingham & Pensacola and the Kansas City & Memphis Railway & Bridge Company. The Frisco now controls these companies by stock ownership and operates all of them except the Muscle Shoals line. Considerations to be paid are: for the Fort Scott Company, $62,547,775, Birmingham Company $16,040,605, Clinton Company $3,119,059, Muscle Shoals Company $4,396,315, Bridge Company $3,368,405—all in the form of liabilities to be assumed, application for which authority is still pending before the commission.

ST. LOUIS SOUTHWESTERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of three short lines in Missouri and Arkansas, the Gideon & North Island, the Deering Southwestern, and the Blytheville, Leachville & Arkansas Southern and to issue 8,300 shares of its common stock to be exchanged for the entire stock of the three companies. It also has applied for authority to construct extensions from Gideon to Deering and from Hornersville to Leachville, stating that the acquisition of the short lines and the construction of the connecting links will provide it with direct routes to important points in the Mississippi and St. Francis valleys instead of its present circuitous route.

Dividends Declared

International Railways of Central America.—Preferred, 1¼ per cent, quarterly, payable August 15 to holders of record July 31.

Kansas, Oklahoma & Gulf.—Preferred A (No. 1), 3 per cent, payable July 31 to holders of record July 23.

Average Prices of Stocks and of Bonds

	July 24	Last week	Last year
Average price of 20 representative railway stocks.	117.46	116.04	117.94
Average price of 20 representative railway bonds..	92.59	92.92	94.09

Officers

Executive

E. B. Barber, comptroller of the Algoma Central & Hudson Bay, and the Algoma Eastern, with headquarters at Sault Ste. Marie, Ont., has been appointed vice-president in charge of operations of the Algoma Central & Hudson Bay, with the same headquarters.

Frank B. Bowes, who retired as vice-president in charge of traffic of the Illinois Central, with headquarters at Chicago, on July 1, has been in the service of that railroad for 52 years. He was born on January 29, 1862, at Chicago, and entered railway service at the age of 14 years as a clerk in the office of the auditor of the Illinois Central. Later he served as a clerk in the general freight and passenger offices and in 1886 he was promoted to general northern passenger agent at Chicago. In 1894 Mr. Bowes was advanced to assistant general passenger agent at New Orleans, La., and in the following year he was promoted to general freight agent of the southern lines of the Illinois Central, including the Yazoo & Mississippi Valley, with headquarters at the same point. In 1900 his headquarters were transferred to Louisville, Ky. He was promoted to assistant traffic manager, with headquarters at Chicago, on January 1, 1903, and in 1906 he was further promoted to freight traffic manager. In 1909 Mr. Bowes was advanced to general traffic manager of the Illinois Central. He was elected vice-president in charge of traffic on March 1, 1911.

Edward Hungerford, who has been appointed assistant vice-president, public relations, of the New York Central with headquarters at New York, and who has been since 1925 centenary director

Edward Hungerford

of the Baltimore & Ohio, was born December 21, 1875, at Dexter, New York. He was educated at Williston Seminary, Easthampton, Mass., and

Syracuse University. He became a reporter on the Rochester, N. Y., Herald in 1896, where he remained until he joined the staff of the New York Sun in 1898. In 1904 he became editor of the Glens Falls, N. Y., Times. He entered the public relations field following that and was press representative of the Brooklyn Rapid Transit Company until 1911, following which he was advertising manager of Wells Fargo & Company Express, from 1912 until 1918. From 1922 to 1924, he was director of publications of the University of Rochester. In 1925, he was appointed centenary director of the Baltimore & Ohio and for two years worked on developing the Centenary celebration and then directed its presentation in 1927. Throughout the time that he was in newspaper and public relations work, he contributed to a number of the leading magazines in the country, specializing in railroad subjects, among which was a series of transportation articles in the Saturday Evening Post.

George L. Peck, personnel vice-president of the Pennsylvania, with headquarters at Philadelphia, Pa., will retire on July 31, having reached the age limit of 70 years. Mr. Peck was born on July 10, 1858, at Sandusky, Ohio, and entered railway service in 1873 as a messenger on the Toledo division of the Pennsylvania. From 1874 until 1876 he served as telegraph operator, and from 1876 until 1881, as train dispatcher for the same company. During 1881 and

George L. Peck

1882 Mr. Peck served in a similar capacity on the Columbus, Hocking Valley & Toledo (now part of the Hocking Valley), and from 1882 until 1894, served as trainmaster on the Toledo division of the Pennsylvania. In 1894 he became superintendent of the Richmond division of the Pittsburgh, Cincinnati, Chicago & St. Louis (now part of the Pennsylvania), which position he held until January 15, 1896, when he was transferred in the same capacity to the Pittsburgh division of the same road. From January 1, 1901, until June 7, of the same year, Mr. Peck was general superintendent of the Southwest system, Pennsylvania lines West of Pittsburgh, and from the latter date until January 1, 1913, served as general manager of the lines West of Pittsburgh. From January 1, 1913, until February 1, 1914, he was fifth vice-president, and then until June 10, 1918, served as fourth vice-president in charge of the transportation department. From the latter date until March 1, 1920, Mr. Peck was federal manager of the Western lines and affiliated properties. When the railroads were returned to their corporate owners on March 1, 1920, the personnel department was organized and Mr. Peck became vice-president in charge of its activities, which position he has since held.

D. W. Longstreet, who has been elected vice-president in charge of traffic of the Illinois Central, with headquarters at Chicago, has been in the service of that railroad for 41 years. He

D. W. Longstreet

was born near Coffeeville, Miss., and received his education at Washington and Lee University and at the University of Mississippi. He entered railway service in 1887 as a clerk in the local freight office of the Illinois Central at Holly Springs, Miss. After spending several years as a clerk there and in the local and general freight offices at New Orleans, La., Mr. Longstreet became chief clerk in the general freight office at Louisville, Ky. In 1903 he was promoted to assistant general freight agent at Louisville, being further promoted to general freight agent, with headquarters at the same point, in 1905. He was transfered to Memphis, Tenn., in 1907 and on May 1, 1911, he was promoted to freight traffic manager, with headquarters at Chicago. In 1920 he was again promoted to traffic manager, being elected vice-president in charge of traffic on July 1.

Robert V. Massey, assistant vice-president in charge of personnel of the Pennsylvania, with headquarters at Philadelphia, Pa., has been appointed vice-president in charge of personnel, with the same headquarters, effective August 1, succeeding **George L. Peck,** who is retiring. Mr. Massey was born at Dover, Del., on September 29, 1871, and was graduated from the Sheffield Scientific School of Yale University in 1892. He entered railway service in the construction department of the Pennsylvania on September 1, 1892, and remained in that department until August, 1895, when he was transferred to the maintenance of way department, in the office of the assistant engineer at Altoona, Pa. In November of the same year he was appointed assistant supervisor at Freeport, Pa., and in April, 1897, was transferred to Baltimore, Md., as assistant supervisor of the Baltimore division of the Northern Central (now part of the Pennsylvania). Mr. Massey was transferred to Mifflin, Pa., as assistant supervisor of the Middle division of the Pennsylvania on April 1, 1899, and in 1900 was advanced to supervisor of the Schuylkill division. He then served in the same capacity on the Philadelphia, Baltimore & Washington (also now part of the Pennsylvania) and in 1905 was transferred as supervisor of the Pittsburgh yard. On April 1, 1907, Mr. Massey became division engineer on the Schuylkill division and was transferred to the New York division on January 1, 1909. He was appointed superintendent of the New York, Philadelphia & Norfolk (now part of the Pennsylvania) and the Cape Charles (also a part of the Pennsylvania), with headquarters at Cape Charles, Va., in March, 1911. On Febuary 11, 1914, he became superintendent of the Manhattan division, with headquarters at New York, and in May, 1916, when the Manhattan and New

Robert V. Massey

York divisions were consolidated his title was changed to superintendent of the New York division. Mr. Massey was appointed general superintendent of the Eastern Pennsylvania division, with headquarters at Altoona, Pa., in June, 1917. On July 1, 1918, he was transferred to the New Jersey grand division in the same capacity and on March 1, 1920, was advanced to assistant general manager of the Eastern region. Three years later, Mr. Massey was appointed general manager of the Eastern region. In September, 1926, he was appointed assistant vice-president in charge of personnel, which position he was holding at the time of his recent ad-

vancement to the position of vice-president.

J. W. Roberts, who has been appointed assistant vice-president of the Pennsylvania, with head quarters at the Pennsylvania's Produce Terminal in New York, was born at Buckhannon, W. Va., on February 10, 1872, and was educated in the public and high schools and at Indiana College. He entered railway service in 1893 with the Lake Erie & Western (now part of the New York, Chicago & St. Louis), and remained with that company until Febru-

J. W. Roberts

ary 28, 1900. During the following three years he was in the service of the Cleveland, Cincinnati, Chicago & St. Louis, and was then for a short time with the Missouri, Kansas & Texas. During the time he served with these three companies, he was, successively, ticket agent, telegraph operator, freight house platform foreman, freight cashier, station agent, yard clerk, yardmaster, division and system car distributor, train dispatcher, and chief clerk to three different officers. In 1904 Mr. Roberts entered the service of the Vandalia (now part of the Pennsylvania). He rose through successive promotions to the position of superintendent of car service in 1915. He later became general superintendent of passenger transportation, lines west of Pittsburgh, and superintendent of freight transportation, continuing in the latter position during Federal control. Upon the termination of Federal control, he became general superintendent of transportation, Northwestern region, and on May 1, 1923, was appointed general superintendent of transportation of the Eastern region, which position he was holding at the time of his recent appointment as assistant vice-president.

Financial, Legal and Accounting

B. M. Billhardt, formerly in the auditing department of the Pacific Electric, has been appointed treasurer of the Harbor Belt Line, with headquarters at Los Angeles, Cal. **C. B. Nelson,** formerly special accountant for the Southern Pacific at San Francisco, Cal., has been appointed auditor, with headquarters at Los Angeles.

Operating

Louis W. Hill, Jr., trainmaster on the Cascade division of the Great Northern, has been transferred to the Butte division, with headquarters at Great Falls, Mont.

George A. Stokes, superintendent of the Toronto terminals of the Canadian National, has been appointed superintendent of the Belleville division, with headquarters at Belleville, Ont. Mr. Stokes entered railway service in July, 1898, with the Grand Trunk.

N. H. Lockney, assistant master of trains, of the Nashville division of the Louisville & Nashville, with headquarters at Nashville, Tenn., has been promoted to master of trains of the Kentucky division with headquarters at Paris, Ky., succeeding **W. K. Griffin,** deceased.

Edgar E. Ernest, who has been appointed superintendent of the Buffalo division of the Pennsylvania, with headquarters at Buffalo, N. Y., was born on January 18, 1891, at Altoona, Pa. He was educated in the public schools and at Altoona Business College and entered the service of the Pennsylvania in July, 1907, as yard messenger. He later became yard clerk and served in various offices at the Altoona yard until 1912, when he was transferred to the chief train dispatcher's office. He was appointed as-

Edgar E. Ernest

sistant yardmaster in 1916, and served in that capacity both at Altoona and Hollidaysburg. Two years later he was promoted to yardmaster, which position he held until May, 1920, when he was appointed assistant freight trainmaster at Mifflin, Pa. He later served in the same capacity at Harrisburg and Hollidaysburg and in June, 1924, he was promoted to trainmaster of the Cumberland Valley division. Two years later he was transferred to the Maryland division as freight trainmaster, in which capacity he served until his recent appointment as superintendent of the Buffalo division.

D. S. Colby, assistant superintendent of the Fargo division of the Northern Pacific, with headquarters at Staples, Minn., has been advanced to superintendent of the Dakota division, with headquarters at Jamestown, N. D., succeeding **T. M. Flynn,** who has been transferred to the St. Paul division, with headquarters at Minneapolis, Minn. Mr. Flynn replaces **G. H. Jacobus,** who has been transferred to the Lake Superior division, with headquarters at Duluth, Minn. **D. M. Driscoll,** assistant to the general superintendent of the lines East of Mandan, N. D., with headquarters at St. Paul, has been appointed acting superintendent of the Rocky Mountain division, with headquarters at Missoula, Mont., temporarily replacing **J. H. Johnson,** who is now confined by illness to the Northern Pacific hospital at St. Paul. **H. E. Mudgett,** trainmaster at Missoula, has been advanced to assistant superintendent of the Fargo division to succeed Mr. Colby. **E. H. Briley,** chief dispatcher at Minneapolis, has been advanced to trainmaster at Dilworth, Minn., succeeding **E. J. Brierly,** who has been transferred to Glendive, Mont. Mr. Brierly replaces **T. J. Regan,** who has been transferred to Missoula, to succeed Mr. Mudgett.

Traffic

P. L. McGue, division freight agent on the Chicago, Rock Island & Pacific at Wichita, Kan., has been promoted to general agent at Colorado Springs, Colo.

Charles Coughlin, general agent in the freight department of the New York Central at Toledo, Ohio, has been transferred to Chicago. **J. F. Weibel** has been appointed general agent in the freight department at Grand Rapids, Mich., succeeding **W. F. Gleason,** who has been transferred to Toledo to replace Mr. Coughlin.

Fred H. Law, who has been promoted to assistant freight traffic manager of the Illinois Central, with headquarters at Chicago, has been in the serv-

Fred H. Law

ice of that railroad for 31 years. He was born at Sheridan, Ill., on November 10, 1876, and entered railway service in August, 1897, on the Illinois Central After serving in various capacities Mr. Law was promoted to commercial agent at Pittsburgh, Pa., in October, 1909, where he remained until February, 1912, when he was again promoted to assistant general freight agent, with headquarters at Memphis, Tenn. He was transferred to St. Louis, Mo., in February, 1913, and to Chicago in February, 1918. In June, 1925, Mr. Law was promoted to general freight agent, with headquarters at Chicago. His further promotion to assistant freight traffic manager became effective on July 16.

Fred C. Furry, who has been promoted to general freight agent of the Northern and Western lines of the Illinois Centrai, with headquarters at Chicago, was born on October 10, 1883, at Alden, Iowa. He entered railway service on January 2, 1900, as a messenger on the

Fred C. Furry

Illinois Central. He was advanced successively through the positions of messenger, file clerk, stenographer, tariff clerk and chief rate clerk, and in 1919 he was promoted to assistant general freight agent of the Northern and Western lines, with headquarters at Chicago. His promotion to general freight agent became effective on July 16.

O. P. Kellogg, who has been promoted to general freight agent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Seattle, Wash., has been in the service of that railroad for 28 years. He was born in Chicago and first entered railway service in 1900 in the freight claim department of the Milwaukee in that city. In the following year he was transferred to the general freight department at the same point. In August, 1908, Mr. Kellogg was transferred to Butte, Mont., and in June, 1909, with the completion of the line to the Pacific Coast he was appointed assistant chief clerk in the general freight department at Seattle. He was advanced to chief clerk to the traffic manager in 1912 and four years later he was transferred to the office of the general freight agent. At the end of federal control of the railroads in 1920 Mr. Kellogg became chief clerk in the general freight department

O. P. Kellogg

at Seattle. He was promoted to assistant general freight agent, with headquarters at Seattle, on May 15, 1922, and his further promotion to general freight agent became effective on July 1.

C. E. Stailey, who has been promoted to general freight agent of the Illinois Central in charge of solicitation, with headquarters at Chicago, was born on January 14, 1882, at Greenley, Kan. He graduated from high school at Greeley and attended business college at Kansas City in 1901. On November 13, of that year he entered railway service as a stenographer and clerk in the office of the general foreman of the East Kansas City (Mo.) shops of the Kansas City, Pittsburgh & Gulf (now the Kansas City Southern). In 1902 Mr. Stailey was advanced to chief clerk to the general foreman at the East Kansas City shops, where he remained until March 1, 1904, when he left railroad service to

C. E. Stailey

engage in various commercial enterprises. He returned to railway service on April 6, 1906, as a stenographer and clerk in the commercial agent's office of the Illinois Central at Kansas City, being advanced to quotation clerk in the general freight office at Memphis, Tenn., on July 21, 1909. From July 17, 1911, to February 15, 1918, he served as traveling freight agent at Little Rock, Ark., and at Oklahoma City, Okla., then being appointed division freight agent at Omaha, Neb. On March 1, 1920, Mr. Stailey was appointed commercial agent at Kansas City, where he remained until December 15, 1921, when he was promoted to assistant general freight agent, with headquarters at Memphis. He was transferred to Houston, Tex., on August 1, 1924, and to Chicago on June 1, 1925. His promotion to general freight agent became effective on July 16.

Samuel A. Latimer, who has been appointed coal traffic manager of the Central region of the Pennsylvania, with headquarters at Pittsburgh, Pa., was born on November 11, 1885, at Woodville, Allegheny county, Pa. He served as a clerk in the Pennsylvania railroad station at Woodville from December 7, 1901, until February 29, 1904. On March 1, 1904, he was transferred as clerk to the office of the division freight agent at Pittsburgh, where he remained until June 14, 1906. On June 15, 1906, Mr. Latimer entered the service of the Pittsburgh & Lake Erie at Pittsburgh as clerk in the office of the general freight

Samuel A. Latimer

agent, and remained with that company until May 10, 1907. Upon establishment of the tariff bureau by the Pennsylvania at Pittsburgh, Mr. Latimer reentered the service of that company as clerk in the office of the chief of tariff bureau where he continued to serve in various clerical capacities as well as traveling tariff inspector until June 30, 1917. At that time he was transferred from percentage clerk in the office of chief of tariff bureau to assistant chief clerk in the office of the general ore and coal agent at Pittsburgh, and was advanced to chief clerk in that department on October 16 of the same year. On January 1, 1926, Mr. Latimer was appointed coal freight agent at Pittsburgh, which position he was holding at the time of his recent appointment as coal traffic manager.

Engineering, Maintenance of Way and Signaling

G. C. Beaumont, formerly connected with the engineering department of the Los Angeles & Salt Lake, has been appointed terminal engineer of the Harbor Belt Line, with headquarters at Los Angeles, Cal.

J. W. Burt, division engineer of the Chicago division of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Indianapolis, Ind., has been transferred to the Springfield division and the Indianapolis Terminal, with headquarters at the same point. Mr. Burt succeeds W. B. Hodge, who has been transferred to the Chicago division.

Karl M. Hammann, who has been appointed assistant engineer maintenance of way of the Long Island, with headquarters at Jamaica, N. Y., was born on September 29, 1883 at Easton, Pa. He was educated in the Easton public schools, and at Lafayette College, which he attended from 1901 to 1903 inclusive. In 1903 he entered railroad service in the engineering department of the Lehigh Valley, and remained with this road until November 14, 1906, when he became a transitman on the Long Island at Jamaica. On July 15, 1907, he was appointed chief draftsman, and on August 1, 1912, became supervisor at Hicksville, N. Y. On December 1, 1916, he was transferred in the same capacity to Jamaica, and on July 1, 1927, was assigned to special duties in the office of the engineer maintenance of way. He held this position up until July 10, 1928, when his new appointment to assistant engineer maintenance of way became effective.

Obituary

D. W. Triem, assistant superintendent of the Cleveland division of the Pennsylvania, with headquarters at Cambridge, O., died in that city on July 23.

W. K. Griffin, master of trains of the Kentucky division of the Louisville & Nashville at Paris, Ky., died in that city on June 28 following a paralytic stroke.

John Hayes Reagan, superintendent of track of the Grand Trunk Western, with headquarters at Detroit, Mich., died on July 16 at his home in Battle Creek, Mich., following an illness of two months. Mr. Reagan had been head of the track maintenance department of the Grand Trunk Western as general roadmaster and then as superintendent of track for 31 years.

Eugene Ford, vice-president and general manager of the Tremont & Gulf, assistant general manager of the Groveton, Lufkin & Northern and assistant to the president of the Minneapolis & Rainy River, with headquarters at Winnfield, La., died at Wabbaseka, Ark., on July 21 following a sudden illness. Mr. Ford was born on May 12, 1887, at Queen City, Tex. He entered railway service in May, 1904, as a telegraph operator on the St. Louis Southwestern, serving until October, 1909, on the Cotton Belt and as agent and operator on several other railroads. Mr. Ford was then appointed auditor and car accountant of the Groveton, Lufkin & Northern. In November, 1917, he was promoted to general manager, becoming in addition vice-president and general manager of the Tremont & Gulf in January, 1919. From December, 1917, to January, 1919, he also acted as receiver of the Michigan East & West (operations now suspended). Mr. Ford was appointed assistant to the president of the Minneapolis & Rainy River early this year.

Garrett Davis, former district engineer and superintendent of the Chicago, Rock Island & Pacific, who died at Calgary, Alta., on July 16, had been in the service of that railroad for 48 years and had been associated with railways as an engineer and a contractor for 51 years. He was born on August 19, 1855, in Scott County, Ky., and entered railway service in 1874 as a chainman on the Cincinnati Southern (now part of the Southern). He also served with this railroad as a rodman and assistant engineer on construction and in 1876 he engaged in railway contracting. In the following year he was appointed resident engineer of the Burlington, Cedar Rapids & Northern (now a part of the Rock Island). From 1878 to 1900 Mr. Davis served as a roadmaster and as division engineer at Cedar Rapids, Iowa, then being promoted to assistant chief engineer. On July 1, 1902 he was appointed principal assistant engineer of maintenance of way of the Northern district of the Rock Island, with headquarters at Cedar Rapids. From August, 1905, to April, 1921, Mr. Davis was consecutively district engineer for the Rock Island at Cedar Rapids, superintendent at El Dorado, Ark., division engineer at El Reno, Okla., and division engineer at Cedar Rapids. From April, 1921, until his retirement from active service on September 1, 1925, he was division engineer at Manly, Iowa.

Edwin B. Katte, chief engineer of electric traction on the New York Central, with headquarters at New York, died on July 19 after a long illness. Mr. Katte was born on October 16, 1871, at St. Louis, Mo., and was graduated from Sibley College, Cornell University in 1893. He entered railway service in January, 1896, as assistant engineer in charge of the Park avenue viaduct on the New York Central & Hudson River, later serving in the drafting department of the chief engineer's office and as assistant engineer in charge of the water supply. He was subsequently appointed mechanical engineer in the engineering department of the same road in charge of design and construction of heat, light and power plants, coaling stations and water supply. In December, 1903, he became electrical engineer, which position carried with it the secretaryship of the Electric Traction Commission. In November, 1906, he was promoted to chief engineer of electric traction for the New York Central and

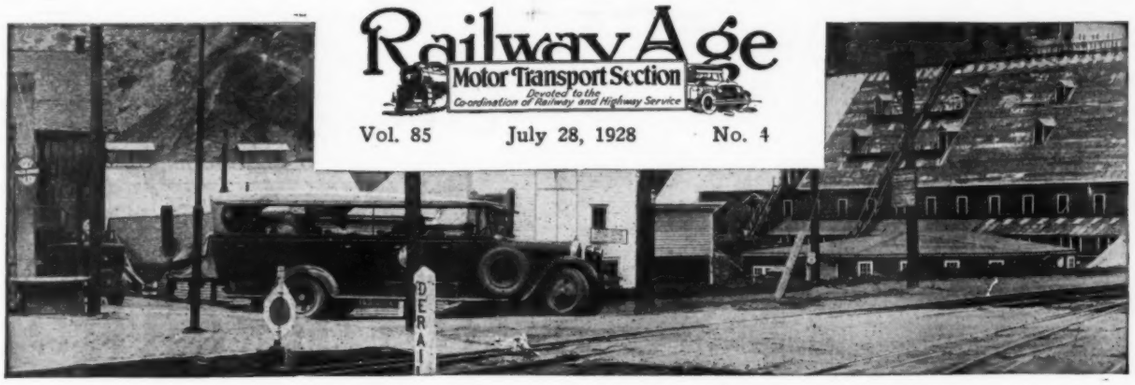
Edwin B. Katte

the New York Central & Hudson River, in charge of design, construction and operation of the electric traction systems, serving in that capacity up until the time of his death.

J. B. Duke, general auditor of the Southern, with headquarters at Washington, D. C., died on June 20 at Southampton, L. I., while on a vacation. Mr. Duke was born on September 23, 1879, at Jackson, Tenn., and was educated at Southwestern Baptist University and at Vanderbilt University. He entered railway service on March 5, 1900, and, until September 1, 1902, served as clerk to the auditor of freight accounts of the Southern. From the latter date until August 1, 1906, he served as clerk in the comptroller's office, and then served as assistant auditor of the Augusta Southern, with headquarters at Augusta, Ga., (now part of the Georgia & Florida) until July 31, 1907. From August 1, 1907 until February 1, 1909, Mr. Duke was chief clerk to the assistant comptroller of the Southern. From August 1, 1909, until June 30, 1913, he served as chief clerk to the comptroller of the same road, and was then appointed auditor of revenue, which position he held until August 31, 1914. From September 1, 1914, until December 31, 1916, Mr. Duke was assistant to comptroller, and from January 1, 1917, until February 29, 1920, was assistant comptroller and assistant federal auditor. On March 1, 1920, he became general auditor, which position he was holding at the time of his death.

William Evans Guy, president of the St. Louis & Eastern, the St. Louis, Peoria & Northern, the St. Louis Valley and the St. Louis & Gulf from 1885 to 1889 when these railroads were absorbed by the St. Louis-San Francisco, the Chicago & Alton, the Illinois Central and the Missouri Pacific died at the Imogene Bassett hospital, Cooperstown, N. Y., July 24 at the age of 84 years.

Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service
Vol. 85 July 28, 1928 No. 4



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The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

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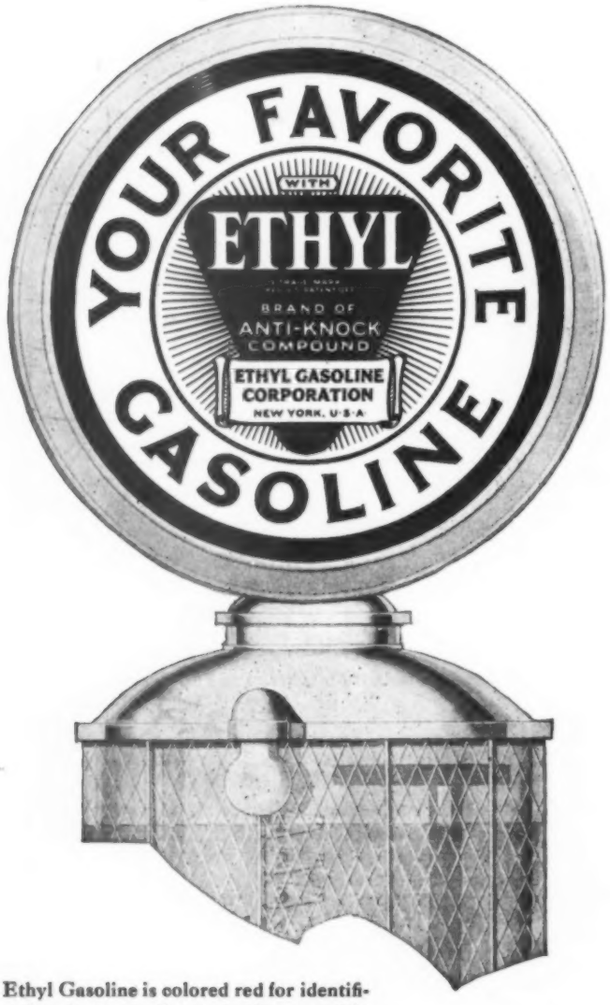

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Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service

Vol. 85, No. 4 July 28, 1928
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Saving 300 Lives

DEATHS from the operation of highway vehicles in the United States, according to the grade crossing committee of the American Railway Association, reached 23,497 in 1927; in other words, these vehicles sent to their doom the equivalent of the entire population of a fair sized city. Of this total, accidents at railway grade crossings contributed 1,974, or 8.4 per cent, of the deaths. Total highway fatalities in 1926 were 21,431, so that the 1927 figure shows an increase of 10 per cent. On the other hand, the number attributed to railway grade crossings was 4 per cent lower in 1927 than in 1926 and the ratio of grade crossing fatalities to total deaths in highway accidents declined from 9.6 per cent to 8.4. If grade crossing accident deaths in 1927 had shown the same increase as did other highway casualties, then 2,270 persons would have lost their lives, as against the actual figure of 1,974. In other words, the railroads, by eliminating crossings, providing greater protection and by educating the public to "cross crossings cautiously" in one year alone may be credited, theoretically at least, with conserving the lives of almost 300 persons. The American people are paying an awful price in human lives for the popularity of highway transportation and it is encouraging to see, in some quarter at least, a tendency toward reducing these casualties.

A Universal Coupler for Tractors and Trailers

THE tractor-trailer as a carrier of l.c.l. freight in the service of the railways will never, it is believed, attain its full development until a universal coupling device is in general use, making it possible for a tractor fitted with the universal coupler to handle any kind or make of trailer. At the present time, no such universal coupler is in use. Each make of trailer can be attached only to a tractor fitted with its own individual type of coupling device. As a result, the uses to which tractors and trailers can be put under the conditions in which the railways are now using such equipment in freight service—namely, under contracts with many trucking organizations owning different kinds of trailer equipment—are distinctly circumscribed. This fact was emphasized by a speaker at the recent meeting of the Motor Transport Division at Atlantic City, who pointed out the impossibility, under present conditions, of operating a loaded trailer over a long route divided among two or more contractors if the tractor operated by these contractors happens not to be equipped for coupling to the same make of trailer. It is evident that there is a demand on the part of the railways, as users of tractors and trailers, for a universal coupling device which would make it possible for a tractor to haul any kind of a trailer equipped with such a device. This step, we believe, would expand to a considerable extent the field of usefulness of the tractor and trailer in railway service. Just as there are two sides to most questions, however, there are probably two sides to this one. We shall be glad to receive and publish discussions of this proposal.

Insurance or Reserve Funds To Handle Claim Payments

WHETHER it is better to carry liability insurance or build up a reserve fund to meet claims for personal injuries or property damage incident to motor coach operation is a question of great interest to the officers in charge of railway motor coach companies at this time. This was indicated by the extended discussion of the question at the Atlantic City meeting of the Motor Transport Division and, also, by letters which have been received in response to a questionnaire on this subject which was sent to a number of the officers in charge of such activities. The comments of these officers on this question which describe their own practices with respect to the carrying of liability insurance or the adoption of the "self insurance" plan are set forth in an article in this issue of the *Motor Transport Section* entitled "Insurance or Reserve Fund to Pay Claims?" On the basis of these statements, it would appear that the smaller or newer railway motor coach operations generally are protected against claims on account of personal injuries or property damage by liability insurance, while the larger and older operations lean toward the reserve fund plan. Even this rule, however, has noteworthy exceptions. Reserve funds are customarily built up by charging a specified amount to operating expenses, this amount being figured usually as so much per motor coach mile operated, or, by taking a certain percentage of the gross revenues for this purpose. In the case of the large operations which have been in existence over a period of time, the building up of a reserve fund by such methods is easy. This cannot be done so readily, however, by a smaller operation with its more limited gross revenues and fewer motor coach miles; and for companies operating on such a scale, liability insurance, taking the practices of existing companies of this sort as a criterion, would appear to be advisable.

Southern Pacific's Growing Motor Coach System

ON the Pacific coast there is in progress of development what is expected to become one of the largest railway motor coach operations in the country. The operations of the Southern Pacific Motor Transport Company, which are described in this issue of the *Motor Transport Section*, are steadily expanding. In its first year, it has established an extensive motor coach system paralleling the railway lines of the parent company, the Southern Pacific, in the state of Oregon, and several shorter lines which will ultimately become the nucleus of a similarly extensive system of highway routes in the state of California. It is expected that

later additional motor coach routes will be put into service in the territory to the east, which is now served by the Southern Pacific lines. The development of this motor coach system has not been without its difficulties. The nature of the regulatory laws in Oregon made it comparatively easy to begin without delay extensive operations in that state. In California, however, the process of securing permission to operate over the various routes proposed by the company has been slower. In the meantime, however, the motor transport company is establishing itself as a useful adjunct to the railway. It is replacing train service with satisfactory and more economical motor coach service and is considered to be developing additional traffic for the railway. Furthermore, in several emergencies when railway lines have been broken, the motor coaches have been pressed into service with excellent results. The development of the Southern Pacific Motor Transport Company is worth watching and studying.

The Motor Transport Division off to a Good Start

THE meeting of the Motor Transport Division of the American Railway Association at Atlantic City last month more than measured up to the hopes of its officers. Working under the handicap of a lack of time in which to make adequate preparation for the presentation of reports on motor transport matters, the chairmen of the three sections of the division succeeded, nevertheless, in arranging for discussions of their subjects which needed no apologies. The attendance at the meeting, while not so large as that at previous meetings, was representative of the large railroads and also of all parts of the United States and Canada.

The session on the third day of the meeting, to which representatives of all interests in the field of motor transportation were invited, was a conspicuous success. This was particularly gratifying in view of the fact that it had not been known how receptive the other automotive interests would be to the Motor Transport Division's proposal of co-operation with them. The presence of a large number of representatives of automotive equipment manufacturers and of their various organizations and the enthusiastic way in which they entered into the discussion of subjects of mutual interest, such as proposed federal legislation to regulate motor coaches operating interstate as common carriers, appeared to assure the fulfillment of one of the purposes of the division—the bringing together of all parties in interest to the end that railway and highway transportation may be developed and co-ordinated to the fullest extent.

The Motor Transport Division, now formally Division VIII of the American Railway Association, has made a good start. There is little room for doubt that its future will be one of consistently constructive activity and signal service to the railways. Following a period of extended investigation of what motor vehicles have to offer as adjuncts of railway transportation, the railways are going ahead at a rapid pace in their adoption of the motor coach and motor truck. The number of roads which are not now operating motor coaches or motor trucks, or planning their operation at an early date, is rapidly diminishing. Announcements of new plans for motor vehicle operation by the railways are being made with significant frequency.

The motor Transport Division, including in its membership nearly all of the men in charge of the foremost railway motor coach and motor truck operations, can be of invaluable assistance to all of the railways in helping them to solve the problems which inevitably arise in the handling of what is to many of them a new kind of carrier. All railways interested in motor vehicle operation will find a large amount of useful and authoritative information in the proceedings of the Atlantic City meeting. They should find the proceedings of future meetings of even greater help, as the committees in the three sections begin to function.

The next meeting of the division, to be held at Detroit, Mich., during the last week in October, will be awaited with considerable interest. By that time, the committees of the division, which have only recently been organized, will have had an opportunity to prepare their first reports, and with most of its organization problems out of the way, the division should be ready to concentrate upon matters concerning the operation and maintenance of motor coaches and trucks and their coordination with railway service. There should be a larger attendance at the Detroit meeting. What they lacked in numbers, those attending the Atlantic City meeting and other meetings of the division have made up in enthusiasm for their subject. On the other hand, the program of the division is such as to interest a much larger number of railway officers—officers not from one or two departments, but from virtually all departments.

Recent Developments

ADDITIONAL evidence of the adoption of motor transportation by the railways is furnished in the new developments of recent weeks. One of the most important of these was the renewal by the Pennsylvania of its application for a charter from the state of Pennsylvania for its highway subsidiary, the Pennsylvania General Transit Company. Another eastern line, the Richmond, Fredericksburg & Potomac, has applied to the State Corporation Commission of Virginia for a charter for a subsidiary company to operate a motor coach line in that state. The Central of New Jersey has inaugurated a motor truck service through its subsidiary, the Central of New Jersey Transportation Company, for the transportation of l.c.l. freight between two points in New Jersey. Two short lines in the southeast, the Wadley Southern and the Louisville & Wadley, have organized the Short Lines Motor Transport Company and are operating two motor coach routes in Georgia. The Georgia Railroad has substituted motor coach service for steam train service on one route, the motor coach service being operated by a subsidiary, the Georgia Highway Transportation Company. In the middle west, the Chicago & Alton, through its subsidiary, the Alton Transportation Company, has taken over several additional routes, certificates having been granted by the Illinois Commerce Commission. The Chicago, Milwaukee, St. Paul & Pacific has contracted for motor coach and truck service on several additional routes, and the Chicago, Burlington & Quincy is providing motor coach tours in the Black Hills. On the Pacific coast, the Southern Pacific Motor Transport Company has acquired or applied for a number of new routes in Oregon and California, and the Union Pacific is going ahead with its plans to substitute motor coach service for local passenger train service in the vicinity of Los Angeles. The anticipated rapid expansion this summer of the motor transport operations of the railways appears to be under way.

A Seaboard Air Line Coach in the North Carolina Mountains

Motor Transport Division Meets at Atlantic City

Sessions marked by large attendance and keen interest in subject matter—Committees render first reports

THE Motor Transport Division, now officially designated Division VIII—Motor Transport, of the American Railway Association, met at Atlantic City, N. J., on June 21-23 and heard the first reports of its newly organized committees. This was the second regular meeting of the division and was held at the same time as the conventions of the Mechanical and Purchases and Stores Divisions, exhibits of motor transport equipment being an important feature of the equipment display regularly provided at the Atlantic City meetings of the latter divisions by the Railway Supply Manufacturers' Association.

The attendance at the sessions of the Motor Transport Division was large, particularly on the last day when an open meeting was held, which representatives of all branches of the automotive industry were invited to attend and to participate in the discussion of questions of mutual interest. The first day of the meeting was devoted to the reports of the committees in the Motor Coach and Rail Motor Car Sections, and the second day to the reports of the committees of the Motor Truck Section.

A. P. Russell, president of the New England Transportation Company, vice-president of the New York, New Haven & Hartford and chairman of the Motor Transport Division of the American Railway Association, opened the meeting on June 21 by proceeding directly to the subject of the division of the country into regions, each to have territorial chairmen who would form the three sectional committees—the motor coach committee, the motor truck committee, and the rail motor car committee. He pointed out that since the first meeting, when it was decided to organize the three committees with membership representing the different sections of the country, T. B. Wilson, vice-president and manager of the Southern Pacific Motor Transport Company and chairman of the Motor Coach Section, had commenced to organize a committee, which he headed,

on the basis of sectional representation. About that time, G. C. Woodruff, assistant freight traffic manager of the New York Central and chairman of the Motor Truck Section, according to Mr. Russell, presented the plan of dividing the country into seven regions, each to have a sub-committee representing each of the three sections of the Motor Transport Division, chairmen of these regional committees to be the members of the three committees of the division. In this way it was thought that any problems to arise might be handled by regional committees first within a territory where conditions were alike.

The Regional Committees

The different regional divisions suggested were shown in a map published in the Motor Transport Section of the *Railway Age*, June 23, 1928, on page 1484. Mr. Russell reported that the committees representing the Motor Coach Section, the Motor Truck Section and the Rail Motor Car Section had been organized. He said that the Motor Coach Section committee, appointed by T. B. Wilson, consisted of R. J. Littlefield (Boston & Maine Transportation Company), F. S. Hobbs (New England Transportation Company), G. L. Whipple (Union Pacific), M. F. Steinberger (Baltimore & Ohio), E. D. Osterhout (Reading), R. H. Clarkson (Santa Fe) and C. B. Foster (Canadian Pacific). It was indicated that there might be some modification of this committee because it had been appointed prior to the adoption of the regional plan.

R. L. Fairbairn, manager of the passenger service bureau of the Canadian National and chairman of the Rail Motor Car Section, has formed his committee of L. B. Burns (Seaboard Air Line), E. Wanamaker (Rock Island), E. W. Lollis (Chicago, Milwaukee, St. Paul & Pacific), G. L. Whipple (Union Pacific), H. M. Eicholtz (Chicago & North Western), and J. K. McNeillie (Delaware & Hudson).

The committee of the Motor Truck Section under the chairmanship of G. C. Woodruff (New York Central) consists of C. J. Chenworth (Atlantic Coast Line), J. G. Drew (Missouri Pacific) W. E. Cooper (Chicago, Milwaukee, St. Paul & Pacific), J. P. O'Brien (Union Pacific), M. F. Steinberger (Baltimore & Ohio) and J. L. Hill (Long Island).

Mr. Russell in reporting the membership of these committees emphasized the fact that they were not complete, but that their selection showed that some progress has been made in getting together members of the committees who would act as regional committee chairmen within the regions they represented. He pointed out that when the regional plan was first suggested, objection was raised on the ground that a railroad would be represented in two, or perhaps three, different regions. Mr. Russell said that it was to meet just such a condition that the regional plan was devised, for there was no reason why any road covering a territory in different regions should not be represented in each region; on the other hand, it was thought that it would be necessary to have the different regions traversed by a line representative because conditions in different regions might differ so largely that one man representing a road from one region might not be acquainted with conditions on that same road in another region.

After covering the subject of the appointments to the regional committees, Mr. Russell brought up the matter of the next place of meeting which he said would be held in October, about the 24th, 25th and 26th. He indicated that it was considered advisable to hold this meeting at Detroit and that at this meeting it will probably be decided that the following meeting will be held at some point chosen by the representatives of the roads serving the Far West.

Following his remarks on the subject, it was voted to hold the annual meeting in Detroit.

R. H. Aishton's Address

Chairman Russell then introduced R. H. Aishton, president of the American Railway Association, who spoke briefly of the fact that the board of directors of the American Railway Association had voted to give the Motor Transport Division full status and standing such as that possessed by every other division of the association, by formally amending the by-laws to create Division VIII, Motor Transport. Mr. Aishton expressed his approval of the regional plan for the organization of members of the various committees, emphasizing the importance of arousing public interest and saying that the development of regional committees was one of the best means of doing this.

Mr. Aishton briefly reviewed transportation development, emphasizing the fact that railroads are the backbone of any transportation system; mentioning transportation by motor vehicle as one of the latest steps, and saying that people in the United States had an undisputed right to every means of transportation they desired. He said that as long as transportation means demanded by the public seemed economically justified, the railroads would not place themselves in a position of opposing any such development.

Report of Law Committee

R. N. Van Doren, vice-president and general counsel of the Chicago & North Western and chairman of the law committee of the Motor Transport Division, followed Mr. Aishton. He began by referring to meetings of the legal committee with various interests in the country to consider the formulation of federal legislation for regulating interstate motor vehicles.

He spoke of several problems which arose and said that the thing upon which the railroads had insisted and which they had succeeded in having included in the bill (known as the Parker Bill) presented in the House of Representatives, was the clause having to do with the granting of certificates for motor coaches and which required regulatory bodies who would have the power to grant such certificates to give proper consideration to the interests of steam railroads with lines in the territory to be served by the applicant motor vehicle transportation company. Mr. Van Doren reviewed briefly the history of the Parker bill in its presentation before the house, its reference to a sub-committee and its being put over until another session of Congress.

Chairman Russell then introduced W. H. S. Bateman, president of the Railway Supply Manufacturers' Association, who welcomed the Motor Transport Division and discussed briefly the enormous development which he has observed at the Atlantic City conventions.

Motor Coach Section Reports

The meeting was then turned over to T. B. Wilson, chairman of the Motor Coach Section. Mr. Wilson first introduced R. J. Littlefield, manager of motor coach service of the Boston & Maine Transportation Company, who read a paper entitled "What is the Determining Factor in Establishing a Motor Coach Service?" In a general classification of the determining factors Mr. Littlefield cited service to the public, revenue protection, economy and special traffic considerations to be the foremost. He discussed each of these

in turn, indicating in each instance pertinent questions to be raised in cases where a proposal for motor coach service is under consideration.

In his discussion of public service as one of the factors, Mr. Littlefield emphasized the growing popularity of tourist traffic on motor coach lines, pointing out that it affords to the public an opportunity to travel to scenic spots otherwise inaccessible. For this class of traffic he favored an extension of all-expense motor coach tours, and stated that 18 of these are now available to patrons of the Boston & Maine Transportation Company. In discussing the revenue protecting aspects of motor coach operation, Mr. Littlefield held that it may often be expedient for a road to operate one route which may seem unprofitable in itself but which, if abandoned or permitted to come under the control of an independent operator, would result in considerable loss of revenue to the railroad.

Possibility of more economical operation of branch lines of light traffic was discussed in that section of the paper which dealt with the possibilities of the motor coach as an operating expense reducer. Within the past three years, Mr. Littlefield pointed out, motor coaches of the Boston & Maine Transportation Company have been substituted for Boston & Maine trains on 16 routes, resulting in large savings in out-of-pocket costs to the railroad, the motor coaches costing only about 40 per cent as much as the rail service.

In considering his fourth and concluding point, Mr. Littlefield pointed out that the flexibility of the motor coach makes it peculiarly useful for the class of business which involves the mass transportation of special groups or a movement between places not served by railroads. He concluded that the coach fills many gaps where a smaller unit than the train or rail car is desirable.

Discussion of B. & M. Methods

In the course of the discussion which followed the reading of the paper, Mr. Littlefield stated that the motor coaches of the Boston & Maine are operated through an independent subsidiary in very close cooperation with the management of the parent railroad which owns all the subsidiary's stock and its equipment as well, leasing the latter to the subsidiary. In response to another question, Mr. Littlefield stated that the Boston & Maine Transportation Company, taken by itself, was able to operate at a small profit for the year 1927.

In outlining the method of making a survey to determine the expediency of inaugurating a motor coach service, Mr. Littlefield stated the most important thing is a knowledge of what passenger trains are doing. With his company, a periodic check of passenger trains is made so that information as to the original destination and average journey of passengers is at hand. From these data determination of what traffic might better be handled by motor coach is made. Another important consideration, according to Mr. Littlefield, is the handling of mail, baggage and express where train service is to be discontinued.

In explaining the status of railroad tickets on a motor coach line of the Boston & Maine, Mr. Littlefield said that where coaches take the place of trains, railroad tickets are honored on the motor coaches. Where the coach is a supplement to the main line trains, commutation tickets are not usually honored, although exceptions have been made to provide adequate service under a commutation rate. Concluding questions asked Mr. Littlefield referred to the method of survey to be employed in order to determine whether protection of rail revenue made the establishment of a motor coach line advisable.

Scope of Services of Railway Motor Coaches

Mr. Wilson next introduced F. S. Hobbs, general manager of the New England Transportation Company, who read a paper on the scope of the services in which motor coaches are used by the railroads. Mr. Hobbs stated the policy of the New England Transportation Company to be one of co-ordination of highway service with the train service of the New Haven, by replacing unprofitable branch and short main line passenger trains with motor coach service, and by the inauguration of coach service supplementary to existing train service during certain periods of the day and over routes where it is advisable to protect business. He went on to say that in many cases passenger travel is insufficient on local trains even to warrant the operation of a rail car, but added that the obligation of the railroad to the public must be recognized, and, hence, a satisfactory method of travel must be provided. Mr. Hobbs said that the motor coach is the best vehicle with which the carriers may give a satisfactory service in lieu of train or rail car service.

In discussing the place of the motor coach as a supplement to the train, the speaker stated that in many cases it provided an economical vehicle for handling the traffic on certain lines where train service is necessary only during the peak movements of each day. Within the scope of the service in which the railroads may use motor coaches to advantage, Mr. Hobbs next included feeder service, and held that both classes of routes, those which supplant railroad service and those which are supplementary to it, act as feeders to the railroad. In the case of the former, the coach schedules usually coincide with those of the trains at junction points and thus are able to deliver traffic which was formerly delivered by the abandoned trains. Also, he held, an attractive motor coach schedule will compete with private automobile traffic to the advantage of both the coach lines and rail service.

Mr. Hobbs next considered the feasibility of long runs and movements by night and stated that the majority of the New England Transportation Company's long runs involved night operation. In discussing the long runs, Mr. Hobbs stated that the New England Transportation Company operates over two routes between Boston and New York, a distance of 237 miles, and it is often necessary to double and even triple the service in order to care for the traffic. He cited a recent instance where six coaches, carrying 146 persons, ran out of New York for Boston in a single night. These were followed the next morning by three more, making a total of nine, where but two were regularly scheduled. With reference to this long-haul aspect of motor coach operation, Mr. Hobbs suggested that studies should be made with a view to replacement of unprofitable trains by motor coach service, as well as supplementing existing service so that at least a part of the local service may be connected up and perhaps made more valuable to the public. Also, he held that feeder service should be used to feed this existing service after it has been connected up, with a view to increasing the revenue per mile of the faster service.

Referring to the possible regaining of lost traffic by a railroad inaugurating coach service, Mr. Hobbs stated that in many cases total traffic handled by the New England coaches and New Haven trains indicated that combined traffic had reached the railroad peak load of

1923. He felt sure that during this year the parallel steam and motor coach operations of the New Haven would show an aggregate equal, and in some cases, exceeding the original peak load revenue of the New Haven before the motor coach service was commenced. In the discussion which followed the presentation of the paper, Mr. Hobbs answered several questions relative to details of operation, schedules and matters of personnel.

Liability Insurance vs. Reserve Fund

J. L. Whipple, general superintendent of transportation of the Union Pacific, reported on the subject of policies with respect to liability insurance. He mentioned the inadequate insurance coverage of some independent motor coach operators, showing that only 40 of the states required the carrying of liability insurance and that only 25 of them required insurance from carriers of property. Coverage varies somewhat, generally being fixed at $5,000 for injury to a person and $10,000 in the case of death. These minimum figures, the speaker thought, were too low since judgments being allowed by courts for personal injuries are mounting. He said that $50,000 coverage for any one person and $200,000 for any one accident would be more reasonable.

Adequate insurance coverage tends to promote care in accident prevention. The law should permit an option in the method of insurance, allowing self-insurance to approved companies, depositing bonds or in any other manner guaranteeing permanence and stability.

The Union Pacific, he said, carried a blanket policy on each of its motor coaches with a coverage up to $50,000 for one person, $200,000 for one accident and $5,000 for property damage. Another line, he continued, deposited bonds with the state commission as required, building up a reserve fund on a mileage basis to take care of claims and charging off each deposit in this fund to operating expenses. The reserve is accumulated on the basis of 1 cent per motor coach mile. He stressed the importance of skill and caution on the part of the drivers in reducing premium costs.

Chairman Wilson stated that his company had comments from passengers to the effect that they felt at ease riding in a coach owned and operated by a responsible railroad company, whereas they were timorous of riding in an independent coach. He spoke of poorly financed and uninsured independents which would go out of business following a serious accident, leaving injured persons without redress.

G. W. Lupton, assistant to the vice-president of the Atchison, Topeka & Santa Fe, brought out the fact that it is not necessary to carry insurance on passengers riding in trains and asked the speaker if he thought there was more hazard in the operation of motor coaches than in the operation of trains. The speaker replied that he felt that there is a great deal more hazard because there are few uncontrolled factors in the operation of a train, whereas a motor coach might meet a thousand vehicles in an hour, and no matter how careful the motor coach driver might be, he could not control "the other fellow." F. S. Hobbs (New England Transportation Company) said 95 per cent of minor accidents were brought about by poor driving on the part of "the other fellow."

Chairman Wilson told of the difficulty in collecting from such persons who damaged his company's coaches to the extent of $15 to $30. The insurance company protecting "the other fellow" would not pay unless sued, and it would not pay to have a court action for such a small amount. Mr. Wilson told of his company's mountain runs where no trouble was experienced by reason of the fact that the best drivers were used on these runs and the highest wages paid them.

Mr. Hobbs told of his company's schedules being made on a basis of 20 m.p.h., with a maximum speed of 30 m.p.h. permitted. The accident hazard, he said, increased materially when 30 m.p.h. was exceeded.

M. F. Steinberger, special engineer of the Baltimore & Ohio presented a thoroughgoing report on state commission and court decisions bearing on the subject of railroad operation of motor vehicles and the operation of motor vehicles in competition with railways. An abstract of this report will appear in the *Motor Transport Section* of August 25.

Rail Motor Car Section Reports

The division next took up the consideration of rail motor car problems. R. L. Fairbairn (Canadian National), chairman of the section, presided. The first speaker was E. Wanamaker, electrical engineer of the Chicago, Rock Island & Pacific. He gave some details of the history of the development of the rail motor car, stating that the electric transmission was becoming rather generally accepted for the larger sized rail cars. He spoke also of the improvement in the internal combustion motors during recent years, mentioning that the prospects of the Diesel engine in this service were becoming more promising. He estimated the cost of the operation of motor cars with trailers, up to and including four-car trains, allowing 5 cents per mile for general overhauling, at from 35 cents to 70 cents per mile, in comparison with replaced steam trains costing from 80 cents to $1.25 per mile. In his opinion, rail motor cars are not as well fitted to build up traffic as the highway motor coach is, for the reason that the rail car cannot be placed on frequent schedules without interference with other traffic.

He stated that his company had five main line motor trains in operation which had been able to improve somewhat on steam train schedules and had gained a little traffic as compared with the smaller steam trains, presumably because of somewhat better schedules and the absence of smoke during the summer. He stressed the importance of choosing equipment which would not become obsolete in a comparatively short time and urged the consideration of highway equipment as a possible alternative in any studies relating to rail motor car installation. He believed the operation of motorized trains, up to 6 cars, by one motorman would be entirely safe without having the counterpart of a fireman. He stated that he strove to secure weight of about 600 lb. per h.p.

C. S. Lake, special assistant to the president, Chesapeake & Ohio, raised a question whether the ownership by the railroads of small but not quite obsolete locomotives, which would otherwise stand around idle, did not have some effect on the substitution of rail motor service. The speaker replied that an operating saving of 25 cents a mile or more would throw the balance in favor of the rail motor equipment.

G. L. Whipple (Union Pacific) gave some details regarding the experience of his company with rail motor equipment where important savings in operating expenses have been made. L. B. Burns (Seaboard Air Line) gave similar information regarding the experience of his road with the equipment. In answer to a question, Mr. Burns stated that he found that pas-

sengers preferred to travel in the trailer rather than in the engine car because of vibration.

Fuel for Rail Cars

The question arose as to fuel, and Mr. Wanamaker told of the Rock Island's experience with distillate. He stated that the term was rather broad; that the fuel by that name used by the Rock Island was a mid-continent product which did not lend itself to economical conversion into gasoline unless the refiner could secure a high price for it; and that this "distillate" is practically the same product as that which was formerly known as "coal oil." Furthermore, he stated that it had apparently been demonstrated that this fuel could be produced from coal.

Another advantage advanced in favor of distillate was the fact that, not being as explosive as gasoline, it was safe to carry a heavy supply of fuel on a long run without the necessity of refueling. The advantages of distillate, he said, depended upon the size of the engine and fuel consumption. For the smaller unit, fuel cost was not such an important factor and it probably would not be worth while to go to the trouble of utilizing distillate.

A question was raised about the carbon encountered in the burning of distillate fuel and the speaker declared that there is practically no carbon. He stressed the fact that the problem was different from that with pleasure cars where the load is only 15 or 20 per cent, whereas the rail motor cars must be in condition to handle a maximum load at all times.

F. Hartenstien (Lehigh Valley) told of the experience of his road with rail motor cars which sometimes handle, in addition to trailers, as many as three milk cars successfully.

Chairman Fairbairn commented on seating accommodations, stating as his opinion that the seats might well be as comfortable as those in the modern highway motor coach. H. M. Eicholtz (Chicago & North Western) stated that his company had some trouble with vibration, the trouble being that the springs were too resilient; however, the manufacturers had corrected it. He questioned the advisability of using motor coach seats in rail motor cars, since there were times when large capacity was needed which, he believed, the proposed type of seat would tend to limit.

Motor Truck Section Reports

At the session on June 22, G. C. Woodruff, assistant freight traffic manager of the New York Central, and chairman of the Motor Truck Section, presided. Mr. Woodruff outlined the regional committee plan to the membership and then called on C. J. Chenworth (Atlantic Coast Line), regional chairman, to report for Region I. He stated that there was no extensive use of motor trucks by railroads in this territory, except for the handling of company material and the interchange of l.c.l. freight between the railroads in some of the larger cities, this latter service being provided usually by contract. There were a few trucks operated by railroads in revenue service, principally in the handling of mail, baggage and express.

He stated that observation had shown a loss of an appreciable amount of business to motor trucks, and this competition was not limited to short hauls. In this region cotton was moved by truck as much as 100 miles; tobacco was going in some cases as far as 200 and 300 miles by truck, and chain stores and wholesale houses were effecting distribution largely by truck from centrally located warehouses.

He told of a growing use of trucks in transportation of vegetables and berries from the eastern Carolinas as far away as New York, 550 miles distant. At some points, he stated, railroad platforms had been used in buying vegetables and in marking packages which were then loaded and shipped by truck. In 1927, he stated, the equivalent of 92 carloads of strawberries had been shipped from North Carolina to points from 200 to 555 miles away. During the 1928 season this truck movement grew to the equivalent of 251 carloads. The rates charged by truck in 1928 were substantially the same as express rates. He stated that the trucks handling this interstate hauling were generally paying license fees in only one state where they made but a small proportion of their mileage, the effect being a virtual subsidy for their operations in other states where they were not required to pay anything on the highways.

The instance of these berry shipments provoked considerable questioning and discussion. The speaker stated that most of this trucking was handled in privately owned trucks with no provision for refrigeration. The trucking time, he stated, is slightly faster than freight, but much slower than express. The trucks made the run to New York in about 27 hours, the vehicles used generally being medium capacity, high-speed trucks with pneumatic tires. It was brought out that trucks would not handle business which had to be reconsigned en route, possibly being detained several days for instructions, but that there was a certain amount of business moved directly from the producing area to the market which the trucks were able to secure. The speaker was requested to watch trucking of this character and report to the next meeting of the division what, if any, solution the railroads found for dealing with this competition.

It was stated that the regional committees of the motor truck section would endeavor to make some studies as to the volume of business moved by trucks in their respective territories for the information of the division and the railroads in general. J. G. Drew, vice-president, Missouri Pacific, reported on motor trucking conditions in Region 2. He stated that there was very little competition in this section on perishables because of the long haul, although there was a rather heavy movement of cotton by truck in Arkansas and Texas.

Trucking of Live Stock

In the absence of P. P. Hastings, general freight agent of the Atchison, Topeka & Santa Fe, chairman for Region 4, E. W. Lollis, general superintendent of the Chicago, Milwaukee, St. Paul & Pacific, was asked to tell the results of his observation. He spoke of the extent to which trucks were competing for live stock handling and how this competition was being met. He stressed the assistance the operating department could render by improving the service.

In the absence of J. P. O'Brien, general manager, Oregon-Washington Railroad & Navigation Company, chairman of Region 5, G. L. Whipple (Union Pacific) reported on conditions in that region, stating that Mr. O'Brien would have further details to present at the next meeting of the division.

M. F. Steinberger (Baltimore & Ohio) chairman for Region 6, reported for that region, making a brief statement of the situation with regard to the various large roads in it. The Chesapeake & Ohio, the Erie and the Baltimore & Ohio reported that they had some trucking operations. The Illinois Central reported none. The Chicago & Alton stated that it believed the operation of motor trucks might soon become necessary to

handle baggage, mail and express in service supplementary to its motor coach lines.

Mr. Steinberger also presented a report on commission and court decisions bearing on trucking as it affects the railroads. He cited the report recently issued by the Interstate Commerce Commission in Docket 18,300, giving some statistics regarding motor trucks and reasons for their use, in which it was stated that most hauls were under 50 miles and that the principal reasons for the use of trucks were economical service and dependability. Mr. Steinberger stated that the question from the railroad standpoint, therefore, was largely rates or service and if small reductions in rates were made, a competitive situation generally resulted in more reduction; then the principal weapon would have to be improved service by the railroads given by that form of transportation most suited to the shipment. Chairman Woodruff brought out the fact that the nature of some commodities favored the truck even at a higher rate, for instance, some commodities can be shipped by truck without crating, whereas they have to be crated to be shipped by rail. J. L. Hill (Long Island) told of this road's trucking operations.

The wishes of the New England and Canadian lines were solicited regarding the organization of Region 7. H. F. Fritch (Boston & Maine) stated that his road would rather be in Region 7 than to have a local organization of its own. Representatives of the Canadian Pacific and the Canadian National expressed satisfaction with being linked up with the New England roads as far as their eastern lines were concerned, but preferred inclusion of the western lines with some region in that territory.

Pennsylvania Truck Operation

Mr. Woodruff next introduced J. B. Fisher, general superintendent of transportation of the Central Region, of the Pennsylvania, who discussed of the use of motor trucks as a railroad adjunct. Mr. Fisher stated that, up to this time, the Pennsylvania has not attempted to utilize motor trucks outside such service as might be considered as adjuncts to railroad operations. Even in this service, trucks are used only when benefits of improved service or reduced costs are likely. He said, however, that his road has utilized the truck as a substitute for the train in local peddler service on some 35 routes throughout the system.

Mr. Fisher described the method employed in making these deliveries. The territory is divided into zones with a carload of traffic consigned to a central point in a particular zone, whence truck lines radiate to surrounding stations. No deliveries are made beyond the station. Thus, the service available to patrons is the same as though steam railroad service were operated to these stations. This description applies to one division which, Mr. Fisher stated, is the only one which the Pennsylvania has completely motorized for l.c.l. freight. He said that this road has also adopted some inter-station and inter-terminal deliveries of l.c.l. for solid carload movements, and thus makes possible dispensing with through cars to the larger stations, with resultant savings and expedition of the service.

Trucking operations on the Pennsylvania, according to Mr. Fisher, are all carried on under contracts with outside trucking concerns; nor has the road any intention of inaugurating its own trucking service, since the contract arrangement has been found quite simple and satisfactory. Mr. Fisher saw no advantages in the substitution of truck service for long haul mass movements for he held that freight trains are in a better position to handle this business than motor trucks possibly could be. However, he said, in certain specialized service in short haul territory where a through movement may be made from plant to warehouse, competition is harder to overcome.

Questions asked Mr. Fisher following the presentation of his paper related mainly to details of contracts under which truckmen are employed by the Pennsylvania. In this connection, inquiries were made as to rates paid, liabilities assumed, tonnage, etc. Mr. Fisher stated that the employees of these trucking concerns are in no sense railroad employees and have no recourse to the railroads since the contractor is responsible for liabilities.

New York Central Trucking Operations

Mr. Woodruff next explained the trucking operations of the New York Central and indicated the manner in which they are carried on by that road. In opening he said that the New York Central had a large number of trucking contracts on a divisional basis throughout the system. Prior to 1926, there was no central control of these operations. Later, however, a general committee was formed to work out trucking arrangements and to determine in each instance whether such service should be inaugurated or continued. The divisional basis was retained. If a division superintendent considered trucking desirable in any portion of his territory, he reported the matter to the general superintendent of the district who, if he approved the proposal, brought it before the general committee for consideration and final action. The scope of this committee's work has been extended to include all lines of the New York Central system. No new trucking contracts are entered into, nor are existing agreements altered, except temporarily, without the approval of this committee.

Mr. Woodruff went on to say that the New York Central's trucking operations extend from New York to Chicago, and over the Big Four, the Michigan Central, the Pittsburgh & Lake Erie and the Boston & Albany. Commenting upon the savings possible through the utilization of trucks, Mr. Woodruff said in many cases real money savings cannot be shown on the books. For example, he said the New York Central cannot show in all cases savings in reduced train expense, but, nevertheless, considers the outlay for trucking operations advantageous in that they accomplish other things such as improvement of service, lessened interference or relieved stations for other work.

While this inability to show any savings was present in some districts, Mr. Woodruff stated, on the other hand, that in some it was possible to give figures, which he did. Savings, he added, presented themselves in different ways in different districts, but he held the net result of the New York Central's experience to be that trucking on the whole has more than justified itself.

The speaker said that his road was concerned with placing the trucking service on the best possible basis with the lowest rate commensurate with the best service and reasonable profit to the contractors. Efforts are being made to have a standard tractor and trailer coupling device adopted in order that the utility of the vehicles may be increased.

Explaining the different forms of trucking contracts which his road employs, Mr. Woodruff stated that the principal one and that which had shown the biggest results, is that which eliminates way-freight trains, while the next is the short haul, cross-country operation eliminating the necessity of going around two sides

of a triangle by rail to get to the same point. He said, also, that the trucking operations concerned with the concentration of l.c.l. freight for full car loading have worked out advantageously.

Mr. Woodruff said that he did not consider trucking to be a competitor of the railroads but rather an instrumentality for which proper use must be found as experience is gathered. Every one of the New York Central's contracts is made with a going trucking concern; no one being allowed to establish a trucking line for the sole purpose of getting that road's business. In this manner, the speaker held, adverse public sentiment has not been aroused. A standardized contract for truckmen was advocated by Mr. Woodruff, who added that such agreements have been drawn up by the legal department of his road, specifying the obligations of each party. Each of these contracts contains a cancellation clause.

Discussion and questions which followed Mr. Woodruff's address were mainly concerned with the best trucking practices, and the probability of railway truck operation being a step toward store-door collection and delivery of freight.

Following his replies to these questioners, Mr. Woodruff introduced J. G. Drew (Missouri Pacific) who read a paper entitled "Operation of Motor Trucks by Railroads as Operators and Owners *vs.* Operation of Motor Trucks by Railroad Through Contracts." Mr. Drew considered the question of railroad ownership of trucks to be a local one and conceded that the contract truckman was most satisfactory in many places. He added, however, that in a large center where railroads contract for the transportation of l.c.l freight between stations, they might well operate the trucks themselves through a subsidiary of the companies. An individual ownership, he said, might not be as desirable since it would involve an empty movement.

Mr. Woodruff next introduced M. F. Steinberger (Baltimore & Ohio) who read into the records various regulatory commission decisions relating to motor truck operation.

Open Session

The session of the third day was a joint conference with representatives of the automotive industry for the discussion of matters of mutual interest. Representatives of the National Automobile Chamber of Commerce, the Society of Automotive Engineers, the American Automobile Association and the Railway Supply Manufacturers Association were invited to attend the conference.

Chairman Russell opened with an address of welcome to the guests and continued with a brief description of the activities and organization of the Motor Transport Division. Referring to the question of regulation, Chairman Russell stated that in the past the subject had been approached perhaps without sufficient deliberation, since it was assumed that, if the carriers themselves were regulated, it was but fair that all means of transportation should be so regulated. He added however that the Law Committee, of which R. N. VanDoren, vice-president and general counsel of the Chicago & North Western, is chairman, was now giving consideration of this matter of regulation.

In concluding, Chairman Russell expressed a hope that the division would be able to confer from time to time on matters of mutual interest with any of the organizations interested in the questions which it considers. He then called upon A. J. Brosseau, president of the Mack International Motor Truck Corporation, and vice-president of the National Automobile Chamber of Commerce. Mr. Brosseau thought that the obstacles encountered in the past with respect to legislation were due to the difficulty in finding common ground upon which to base such legislation for the regulation of motor trucks and coaches. Further, he thought that the difficulty was due somewhat to the fact that the matter had been in the hands of others than practical operating men. In outlining the position of the National Automobile Chamber of Commerce on this matter of regulation, Mr. Brosseau read a statement which that organization made to the Interstate Commerce Commission on February 10 in reply to a direct request for its position.

This statement runs: "The motor coach is of the greatest service to the public when it is operated over fixed routes between definite points and on regular schedules. The evidence points strongly to the need for some control of these vehicles in the public interest." He then added that in his judgment the matter has been best summarized by Ralph Budd, president of the Great Northern whose position the speaker stated to be that the only pressing necessity for federal legislation at this time is the requirement of a certificate of public necessity and convenience for interstate operation. This statement, Mr. Brosseau said, was endorsed by his organization, which has told the Interstate Commerce Commission that it would join in an endorsement of this type of regulation.

With respect to the motor truck, the speaker stated that there was no demand from the public on its own behalf for regulation; also that the carrying of commodities and merchandise over the highways by truck is a business that is not comparable to freight transportation by rail.

Mr. Brosseau denied that the automotive industry had opposed regulation in principle. He thought that if all interested parties desired to find a fair, reasonable solution of the problem, whether in respect to the truck or motor coach, or both, a conference may be brought about and would be helpful. He assured his audience that the National Automobile Chamber of Commerce stood ready to continue its co-operation in the finding of a reasonable and fair solution.

Following Mr. Brosseau, Chairman Russell stated his position on the question of regulation. He held regulation to be necessary so that all may be under the same supervisory power, and continued to say that several short-lived motor coach lines have failed because they were operated without any responsibility. They did not submit themselves to regulation as did others which have succeeded. Thus, Chairman Russell added, federal legislation would assist the operator to make a success of his undertaking, and this will protect the investment of automotive and supply concerns in that operator's equipment.

Chairman Russell next refuted the suggestion that the major part of highway operations have no effect upon the railroad by citing experiences of the New England Transportation Company. He said that between Boston and Providence, a distance of 44 miles, with train service every hour, a total of 3600 passengers were handled by New England motor coaches in a recent week-end. Some other highway company, he said, would have handled this traffic if the New England had not, for the people evidently want to ride that way. Between Boston and New York, he continued, during the same three week-end days, 44 coaches transported over 1000 people

along a route which is practically parallel to the rail lines of the New Haven.

Chairman Russell then called upon C. S. Sale, president of the American Car & Foundry Motors Company, asking Mr. Sale to discuss the question of proper seating arrangements for long distance motor coaches and also the possibility of increasing the overall width of these vehicles by a campaign of education in those states which do not permit a width of 100 inches for coaches. The chairman suggested also the question of the feasibility of providing for two maximum widths, the larger to be used on main highways where more than two traffic lanes are provided or where each of two lanes is of sufficient width. He also referred to the efforts of the Society of Automotive Engineers and other organizations to work out a code of general regulations which would be urged upon all states in the campaign of education.

Referring to the possibility of two overall widths, Mr. Sale stated it to be obvious that there may be any number of such widths to meet particular requirements, but added that standardization is desirable from the standpoint of the common interest of the manufacturer and the operator. It was his view that the 96-inch width should be adhered to and made uniform in all states, since, he held, this is about as far as one can go beyond the width of other highway vehicles, such as pleasure cars and trucks, and still keep within the limits of safety.

Mr. Sale, in speaking of proper seating arrangements, thought that developments in this matter on the Pacific coast were somewhat ahead of those in the East. The western lines, he said, are providing comfortable seating arrangements by allowing greater space between seats and by more careful studies of contour. Mr. Sale next referred to the extent to which highway transportation is used instead of railway transportation, and then continued to discuss the rail motor car and proper dimensions and weights for these vehicles.

Mr. Sale's suggestion that the weight of rail motor cars might be reduced brought forth considerable discussion as to the feasibility of considering this type of vehicle as a single unit to be operated largely by itself or as a power unit for trailer cars. In the course of this discussion, which was entered into by several of those present, R. A. Hauer of the Mack Trucks Inc., thought that the answer to the question raised by Mr. Sale as to why the railroads had not purchased more light weight rail cars was that the highway coach is better adapted to the service which could be exacted of these rail units.

Further discussing the matter of single or multiple unit rail motor cars, N. D. Ballantine, consulting engineer, turned from the specific point to general conditions and said that the railroads are facing a critical situation, for in addition to the short haul passenger and l. c. l. traffic loss since 1920, an era is approaching when they must face the situation of losing considerable long haul traffic. The speaker stated that he was told of a recent instance in connection with passenger movement between two large cities 500 miles apart. A check was made at the motor coach station and with the motor coach people which revealed that on this particular day 120 people were moved by motor coach between the two cities, while five trunk lines between the same point had but 50 passengers on that particular day. Hence, Mr. Ballantine said, the railroads were confronted with what seemed to him a rather serious encroachment on profitable long haul traffic. He added also that the airplane is encroaching upon this business and will undoubtedly make further inroads.

Following this discussion, C. S. Lake (Chesapeake & Ohio) reiterated Chairman Russell's welcome to the guests and expressed hope of an agreement that the time is at hand for the building of a better understanding and for the complete restraint of any possible prejudice. He was followed by F. R. Fageol, president of the Twin Coach Corporation.

This speaker further referred to the discussion about the proper size of rail cars, stating that soon larger highway units would be encountered, for the tendency is in that direction. He continued to say that what he called short haul traffic, up to 200 or 300 miles perhaps, is going to go to the highway and added that this would be moved at possibly two cents a mile. Economics, he said, would control this diversion from the rails. Elaborating on the point, the speaker claimed that with the coming of larger and more efficient highway units the cost is going to decline so that the above mentioned standard mile rate of two cents would be in vogue. A step in the solution of the railroad problem, Mr. Fageol added, was to get the Interstate Commerce Commission "automotive-transportation-minded" so that regulatory measures would permit the roads to take full advantage of motor coach and truck operations.

Following Mr. Fageol's address, Mr. Woodruff of the New York Central called for some recognition of the motor truck as an important factor in co-ordinating service with the railroads. He said that net revenues from all passengers carried on motor coaches and rail motor cars is negligible when compared to the actual revenue loss of the railroads as a result of motor truck competition. Freight, he held, unlike the passenger, is a constant factor and reasonably staple as to quantity and movement, and thus more effort should be devoted to the solution of the truck problem. He next suggested that those who feel that the future of motor trucking lies in the power unit of the tractor to be used with trailer or trailers should get together in some way and co-operate with motor equipment manufacturers for the purpose of standardizing the coupling mechanism so that ready interchange of trailers will be possible.

Mr. Woodruff was followed by D. F. Fitch, president of the Motor Terminals Company, Cincinnati, Ohio, who opened his remarks with a statement that he considered the freight cartage contractor has no full appreciation of what the railways are up against. The motor truck, he said, performs its best service within a radius of 60 to 75 miles, but unfortunately some truckers have reached beyond this economic limit in competition with the railroads as the mass carriers. This, in Mr. Fitch's opinion, was one reason for the high cost of living. He continued to say that it had always been his purpose to co-ordinate the rails with the trucks for he thought that the truck has a distinct place in the national transportation field, but not in competition with the railways.

Referring to the matter of regulation, Mr. Fitch stated that in his mind it was significant that the railways of this country directly own and operate under public tariff less than 80 trucks. He thought it would be better for the roads to enter into competition with highway lines paralleling the rails rather than to endeavor to have these lines regulated.

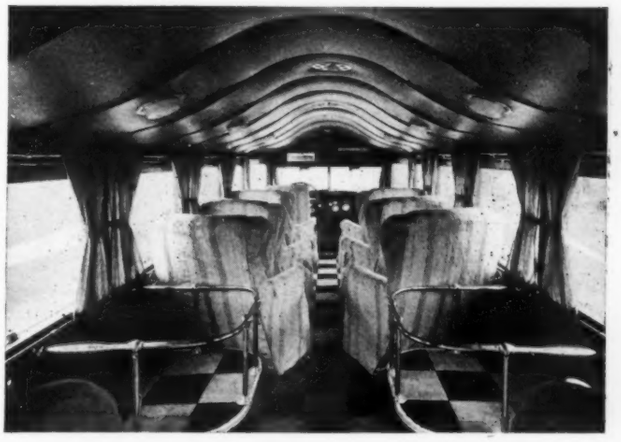
Following the discussion of Mr. Fitch's comments and a closing statement by Chairman Russell, the meeting was adjourned.

Steam-Line Coach with Rotobaker Power Unit

THE first of the new "Steam-Line" coaches, with the Rotobaker steam power unit, has been completed by the Steam Appliance Corporation of America, Inc., Cleveland, Ohio, and is now being demonstrated. This steam power plant was described in the *Motor Transport Section* of November 27, 1926, page 1086. The completed unit consists of a 235-in. wheelbase chassis upon which has been mounted a parlor de luxe type body, manufactured by the Brown Body Corporation, Cleveland. On this particular unit, large swivel chairs have been installed, as shown in the accompanying illustration. The body is steam-heated throughout, using exhaust steam from the engine when running and steam direct from the boiler when the coach is left standing for any length of time in cold weather. In operation, fresh air is drawn down from the outside through ventilators between the windows, is carried over the radiators in the floor and is carried out through the ventilators in the roof.

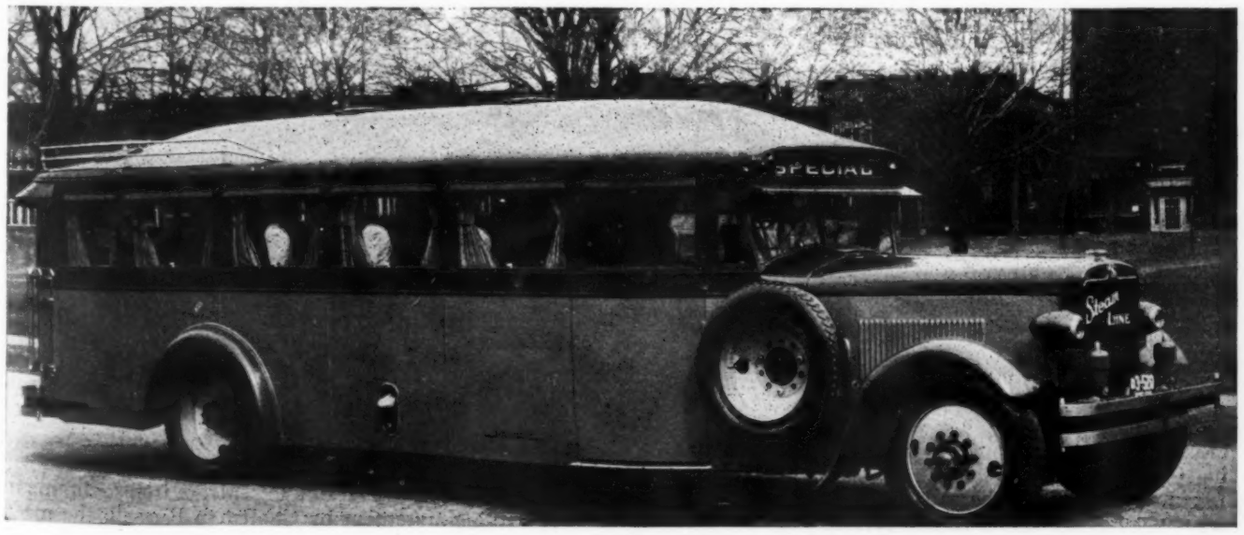
The power unit is known as the Rotobaker plant which the Steam Appliance Corporation uses under a license. It is said that the Rotobaker steam power unit employs no mechanical devices or any major parts in the power plant that have ever been used before in the application of steam to automotive purposes. The Rotobaker power plant for automotive use has been designed and built to meet the following requirements: Automatic control, economical power and extreme flexibility. In connection with automatic control, the power plant is so designed that by the turning of one switch, power will be pre-generated and ready for use when required by the operator. It is said that the operation is so simple that mistakes apparently cannot happen. As for economical power, it is said that tests which have been made indicate the unit obtains about the same number of miles to the gallon of cheap furnace oil as an internal combustion unit will obtain from a gallon of gasoline, when the latter is applied to a vehicle with the same wheelbase, weight and load. Flexibility is obtained through the foot accelerator driving control. The driver is free from gear shifting and has only the steering wheel, foot accelerator and brakes to operate. The left pedal is reverse. The steam power plant, it is claimed, gives practically noiseless, flexible, vibrationless power with straight line acceleration, free from surges.

To obtain simplicity in operation, the unit has been designed and developed to the point where only a single switch need be turned to fill the boiler with water, if it is empty, and to carry out the entire cycle indefinitely of water to steam, steam to transmitted power, and power to motion, with the steam condensed and returned for the next cycle. All of this is accomplished without any further attention from the operator.



Interior View of the First Steam Line Coach Looking Forward

The first steam generators of this sort were built more than six years ago, and it is believed that the long life of this part of the unit has been proved. The engine with a valve mechanism which will not hair-line or cut should, it is said, give many years of service without attention. The fire has been one of the most costly parts of the unit to develop and the builders are now satisfied that the present burner and fire are meeting the requirements of temperature, control and durability. The feed water system, condensing system and automatic controls are considered equally distinctive in design and performance. The first chassis was put on the road about the middle of 1926 and has had approximately two years of development based on its road experience.



The New Steam Line Coach

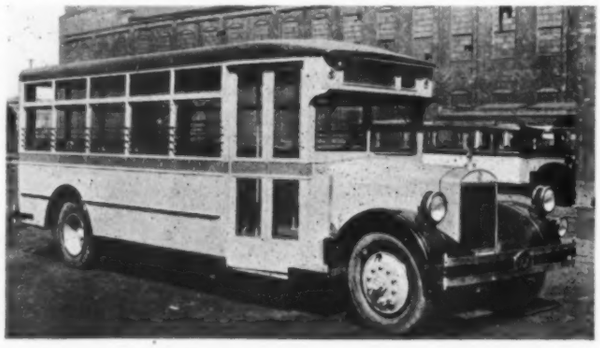
Southern Pacific Establishing A

Mack Motor Coach With Duralyte Body Used on the Santa Cruz-Boulder Creek Line

Now operating 49 motor coaches on 10 highway routes in Oregon, California, and Nevada, aggregating 828 miles in length

SINCE organizing its highway subsidiary, the Southern Pacific Motor Transport Company, about a year ago, the Southern Pacific has built up an extensive system of motor coach lines. The major portion of the present system lies in the state of Oregon where virtually all of the railway lines are paralleled by supplementary highway routes. The process of establishing a similar system of highway routes in California is going ahead more slowly on account of the procedure necessary to secure certificates of convenience and necessity, but the company already has three intrastate routes in this state. In addition to its purely intrastate routes, there are three operations of an intrastate character, two of which cross the state line between Oregon and California and the other of which crosses the Nevada-California line.

Like other railways in all parts of the country, the Southern Pacific was led to establish motor coach service partly to supplement its railway service and partly to replace expensive, unremunerative train service by less expensive operation on the highways. Like other railways, particularly those operating along the Pacific coast, the Southern Pacific has met keen competition for passenger business from independent motor coach lines. In Oregon, for example, it competes with four large and well established independent lines, the Pickwick Stages and the California Transit Company, which operate through motor coaches between San Francisco and the Pacific Northwest, and the Oregon Stages and the Pacific Stages, which have large motor coach systems somewhat more local to Oregon and Washington. In spite of this intensive competition, however, the Southern Pacific motor coaches have been successful in attracting a considerable volume of traffic, not only that local to the motor coaches themselves but also through traffic, feeding to the S. P.



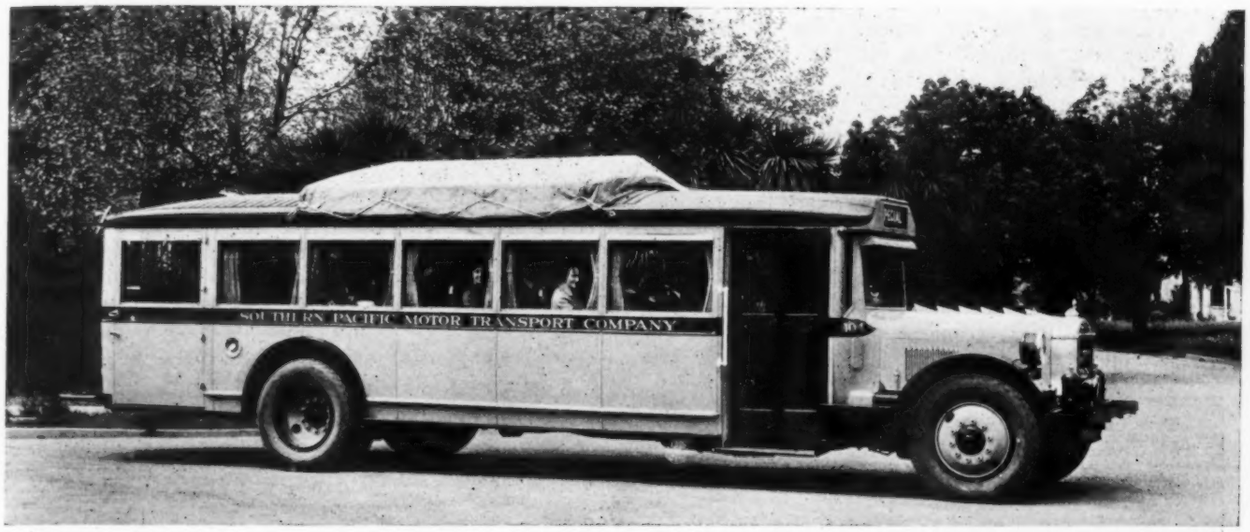
A. C. F. City Type Coach Operated in Salem, Ore.

The Southern Pacific motor coach routes have been established under the general supervision of T. B. Wilson, vice-president and manager of the motor transport company, whose headquarters are at San Francisco. Actual operations in Oregon are under the direction of T. L. Billingsley, superintendent, who maintains headquarters at Salem, Ore., the center of the operations in that state. On account of the somewhat scattered nature of the motor coach lines in the present formative stage, making supervision of operations from one point difficult, several supervisors are located at various points along the system. In California, L. D. Jones, superintendent, is in charge of operations.

The Present System

At the present time the Southern Pacific Motor Transport Company is operating motor coaches on 10 highway routes and locally in 2 cities, its fleet of equipment comprising 49 motor coaches, 3 service cars and 1 inspection car. Among these routes are several comparatively long ones. The longest route over which through motor coaches are operated extends from Portland, Ore., to Ashland, a distance of 329 miles. One round trip a day is made between

A Large Highway System



Fageol Parlor-Type Coach Operated Between Santa Rosa and Napa

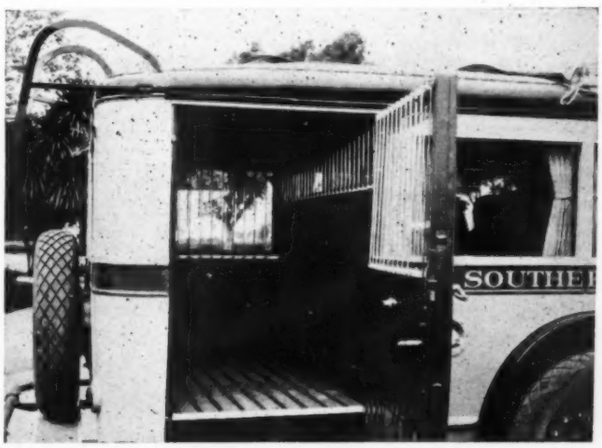
these points, a coach leaving Portland at 8:30 a. m. and arriving at Ashland at 10:12 p. m., the coach in the opposite direction leaving Ashland at 6:30 a.m. and arriving at Portland at 7:35 p.m. In addition, there are other shorter operations along this "main line," including two round trips per day between Portland and Salem, 52 miles; two round trips per day between Portland and Corvallis, 89 miles; three round trips per day between Portland and Eugene, 130 miles; and one round trip per day between Portland and Roseburg, 205 miles. This last run operates via Harrisburg between Albany and Eugene.

Another route is between Portland and Corvallis via McMinnville, a distance of 84.1 miles. One round trip per day is made over this route. A shorter route, 26 miles long, extends from Portland via Hillsboro to Forest Grove. Five trips per day are made from Portland to Forest Grove and four per day from Forest Grove to Portland with two additional round trips daily between Portland and Hillsboro. On another route, serving Oswego Lake points, five round trips are made between Portland, Oswego and Cook.

Two interstate routes are operating between Oregon and California points. On one, between Medford, Ore., and Weed, Cal., a distance of 89 miles, one round trip per day is operated. On the other, extending from Grants Pass, Ore., via Crescent City, Cal., to Eureka, one round trip daily is made. The length of this line is 183 miles. The other interstate route extends from Reno, Nev., to Truckee, Cal., a distance of 38 miles.

In California the motor transport company has three intrastate routes. One of these is between Santa Cruz and Boulder Creek, a distance of 16 miles. Three round trips per day are made by the motor coaches between these points, with an additional round trip between Boulder Creek and Felton. On one of these schedules, package freight service as well as passenger service is offered. Another route lies between Santa Rosa and Napa, a distance of 35 miles, and four round trips daily are operated. The third route, which is a summer operation only, extends from Truckee, Cal., to Tahoe, a distance of 16 miles. Three round trips daily are made on this run during the summer.

In addition to the lines it now has operating, the Southern Pacific has applications pending before the California Railroad Commission for certificates covering other routes. These include proposed lines between Sacramento and Colfax, Sacramento and Gerber, Weed and the California-Oregon state line, Vallejo and Crockett, Pacific Grove and Del Monte Junction, and Santa Cruz and Salinas via Watsonville. The operation of these proposed lines will go a long way toward hooking up the now unconnected segments of the Southern Pacific's highway system.

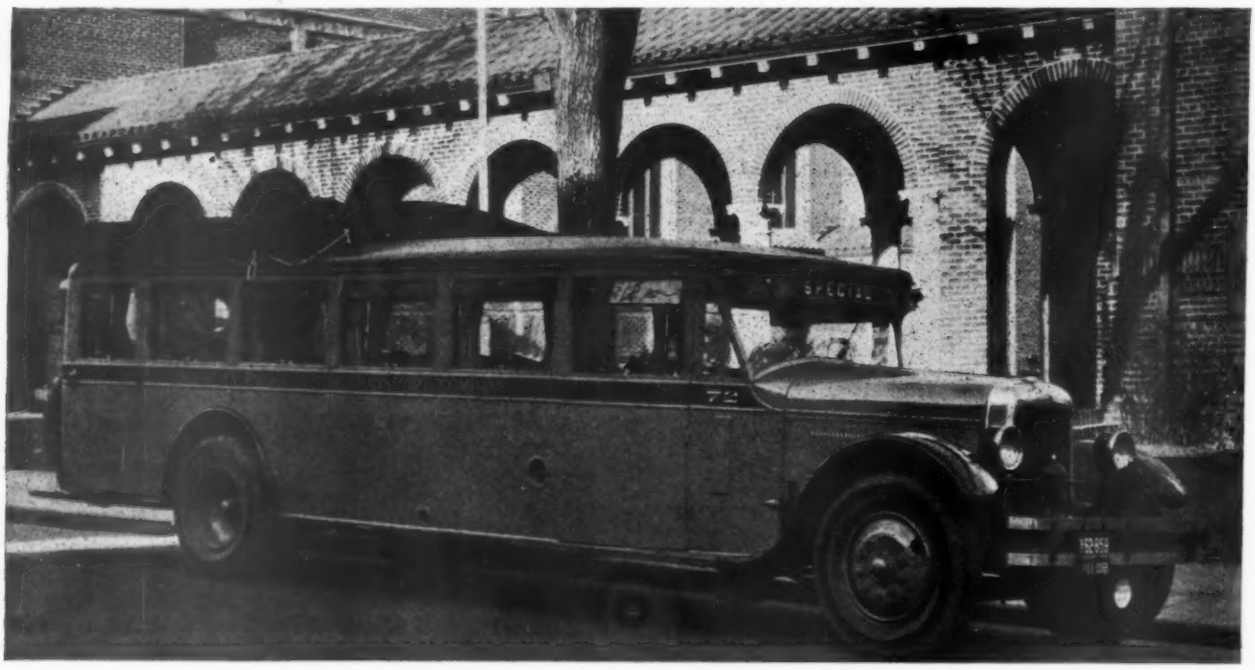


Enclosed Protected Baggage and Package Compartment

Co-ordination With Train Service

Close co-ordination is maintained between the schedules of Southern Pacific trains and the schedules of its subsidiary's motor coaches. As a result of its establishment of motor coach service, the railway has been able to discontinue certain passenger train service in favor of the highway operations, al-

though much more frequent service, supplementary to rail service is now being given by motor coaches than was formerly given by trains. The motor coach schedules are arranged to fill the gaps between the train schedules still maintained and also to connect with through trains at principal connecting points wherever possible. In Oregon, where the most extensive motor coach service now centers, one round trip passenger train per day between Portland and Eugene, another between Portland and Corvallis, and another between Eugene and Ashland, have been discontinued. In addition, approximately ten local trains operating over shorter sections of the railway lines have been eliminated. All classes of Southern Pacific railroad tickets, unless especially restricted, are honored on the motor coaches operated by its subsidiary.



Yellow Coach of Parlor Type Operated on Long Lines in Oregon

Street Cars Replaced

In Salem and Eugene street car service formerly operated by the Southern Pacific has been completely replaced by motor coach service operated by the motor transport company. There is no electric train service now at either place and the substitution of motor coach service has been well received by the people at those points. In Salem three routes and in Eugene four routes are operated.

Equipment

As stated above, the fleet of equipment operated by the Southern Pacific Motor Transport Company now comprises 49 motor coaches in addition to several service cars. On the intercity routes in Oregon, operation of which began on September 20, 1927, 13 Type-Y Yellow coaches and 1 A.C.F. coach, all of the parlor type, are operated. There are also 3 Type-Z Yellow coaches in service on the short Oswego Lake route. In connection with the city service at Salem 16 motor coaches are used, 8 of these being Whites and 3 Morelands, which were taken over from the street car company, 3 Type-X Yellow coaches and 2, city-type A.C.F. coaches. At Eugene 5 Mack street-car motor coaches, 4 Type-X Yellow coaches and 1 Dodge-Graham coach are in service. Three of the Mack coaches were taken over from the predecessor street car company.

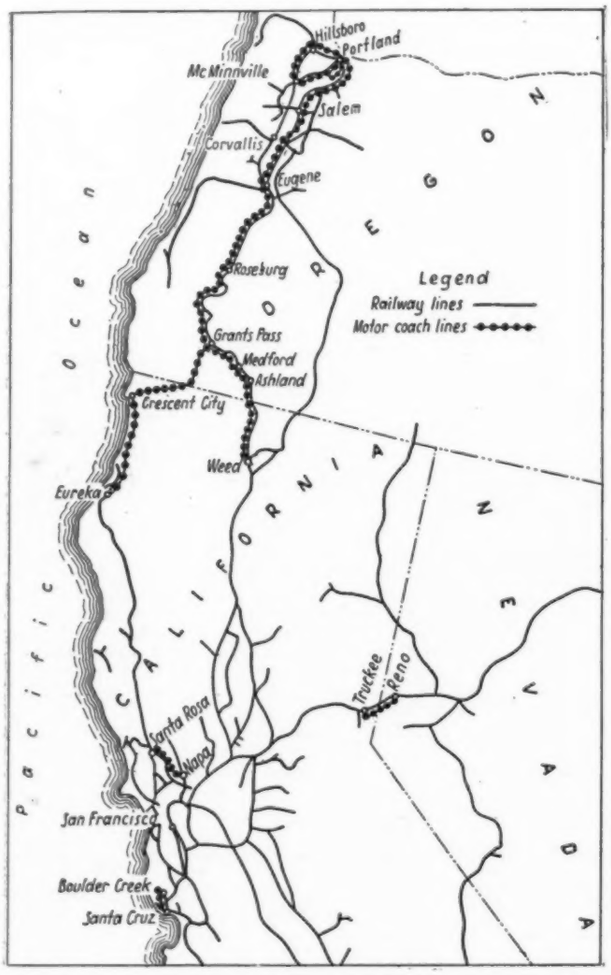
On the Santa Cruz-Boulder Creek route two 25-35-passenger, 4-cylinder Mack motor coaches and one 12-passenger Reo coach are operated, the last being used in mixed passenger and package freight service. Between Santa Rosa and Napa two 18-passenger Dodge-Graham coaches and one 18-passenger Moreland motor coach are used. Two of the units on the Santa Rosa-Napa line are now being replaced by 24-34-passenger, 6-cylinder Fageol motor coaches of the parlor type. The coaches used on the California routes are particularly notable for their enclosed and protected baggage and package express compartments, shown in an accompanying illustration. These compartments contain folding seats which can be pressed into service for use by passengers in emergency.

Results of Operation

In four months' operation on the highways, from October 1, 1927, to January 31, 1928, the motor coaches of the motor transport company traveled a distance of 386,683 miles and carried a total of 78,412 passengers. The average operating cost of the motor coaches operating on the highways in Oregon and California from Oct. 1, 1927, to April 30, 1928, has been approximately 19 cents per mile. Commenting on the motor coach operation as a supplement to the railway service, Mr. Wilson has stated: "The success of co-ordinated motor coach and rail service to date has been very encouraging with better prospects for the future. While there is no way of identifying increased earnings of through trains because of the co-ordinated motor coach service, it is a well known fact from individual cases coming to our attention that the motor coach service is feeding considerable patronage to the through trains."

It is of interest also to note that the Southern Pa-

cific's motor coaches have been of great service in several periods of emergency during recent months. In such instances they were pressed into service at various points when floods or other causes necessitated tem-



Map of the Southern Pacific Rail and Motor Coach Lines in Oregon, California and Nevada

porary abandonment of train service. The motor coaches were used at such times to bridge the gaps in the line.

Mack Six-Cylinder Four-Ton Truck

THE Mack Trucks, Inc., 252 West Sixty-fourth street, New York, has recently added to its line of trucks a six-cylinder truck with a capacity of from three to four tons. This truck is designated as the Model BJ. The engine equipment consists of a Mack six-cylinder, 4¼-in. bore by 5-in. stroke powerplant with the cylinders cast in block. The cylinder heads are cast separately from the block, in pairs, of heat-treated aluminum alloy with turbulence type offset combustion chambers. The pistons are of the Invar-strutted, constant-clearance, aluminum-alloy type. The connecting rods are tubular, and are balanced and machined all over. The crankcase is of aluminum alloy, heat-treated, with hand-operated inspection ports on the left side. The water pump is of the rustless type with an aluminum body, bronze rotor, stainless steel shaft and a single stuffing box. The radiator is of the continuous-finned tube type with a cast aluminum tank and side-plates, carried on rubber shock insulators. The single dry-plate clutch is provided with a rubber torque insulator between the clutch and the drive shaft. The transmission is suspended amidships on rubber-shock insulators, affording four forward speeds with a single-rod shift.

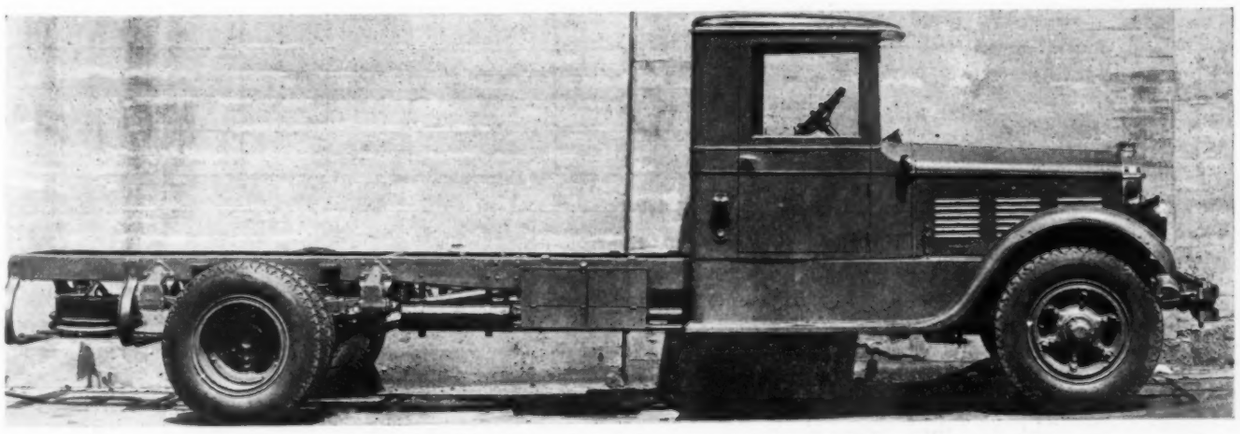
Vacuum Booster Brakes

The truck is equipped with vacuum booster brakes. In the event of a failure, the manual brakes are fully effective. The springs are semi-elliptic all around and are mounted on the top of the axle on integral spring perches with straight through-stud type clips. Rubber shock insulators connect all eight spring tips with the frame.

The heat-treated frame is braced with four tubular and three channel-section cross-members. The front axle is of the reversed Elliot type with side-raked steering knuckles carrying the front brakes.

Body Space

The body space in the frame back of the cab ranges from 12 ft. to 16 ft., depending on the wheel-base which varies from 168½ in. to 218 in. The wheel gage is 71⅜ in. in the front and 66 in. at the rear. The truck is equipped with 36-in. by 8-in. high-pressure pneumatic tires with dual rear wheels.



Mack Six-cylinder Three to Four-ton Capacity Truck

How the Santa Fe Motor Co

Regular and thorough inspection of equ work keep maintenance costs economic a leve

IN 1927, the Santa Fe Transportation Company, which operates a fleet of motor coaches for the Atchison, Topeka & Santa Fe in New Mexico, as described in the *Motor Transport Section* of May 26, covered a total of approximately 700,000 miles. The total cost of maintaining its equipment during that period was $32,764.98, making the maintenance cost per mile 4.5 cents. This low maintenance cost and the almost complete absence of road failures during the year were due, first of all, to the regular and close inspection given the equipment, resulting in corrections being made before rather than after failures, and, second, to the organization of the maintenance work in the company garage at Santa Fe, N. M.

The garage at Santa Fe, where all of the maintenance work on the company's equipment is done, is under the supervision of Frank Horn, assistant superintendent of the transportation company. Under Mr. Horn are a shop foreman, 7 mechanics, 1 man specializing on electrical repairs, 1 man in charge of the stock room, 2 car washers, and several mechanics' helpers. This small force has been found ample to keep the 40 units of equipment owned by the company, including motor coaches, automobiles and motor trucks, in the good condition, both inwardly and outwardly, required by the high standards of the company.

The garage at Santa Fe was converted from a commercial garage. Occupying most of the floor space is a large motor coach storage room, where the equipment is kept when not in service or under repair. Near the doorway is the dispatcher's office and immediately adjacent to it is the driver's room containing a locker for each driver. Along one wall of the storage room is a section where running repairs are made. This contains two pits which are connected and have provisions for lighting and ventilation. The tool and work bench used by the mechanics on running repairs extends along the building wall next to this section.

Immediately to the rear of the running repair section is a semi-enclosed space where the motor coaches are washed, a pressure hose and a steam hose being

The Santa Fe Transportation Company Nº 7201

Fred Harvey Management

DATE ORDERED _____ **HOUSE REPAIR ORDER** CAR _____

DATE COMPLETED _____

DESCRIPTION OF WORK	MECHANICS NAME	TIME	RATE	ENGINE	BODY	CHASSIS	ELECTRICAL	MISC'L.
	TOTAL LABOR							
	PARTS							
	TOTAL COST							

The House Repair Order Controls All Maintenance Operations

Coaches Are Maintained

of equipment and organization of costs down to more a level

provided for this purpose. To the rear of the storage room is the stock room where parts for each of the several types of cars operated by the company are kept separate from each other. This room contains a tire rack for the storage of tires not in use.

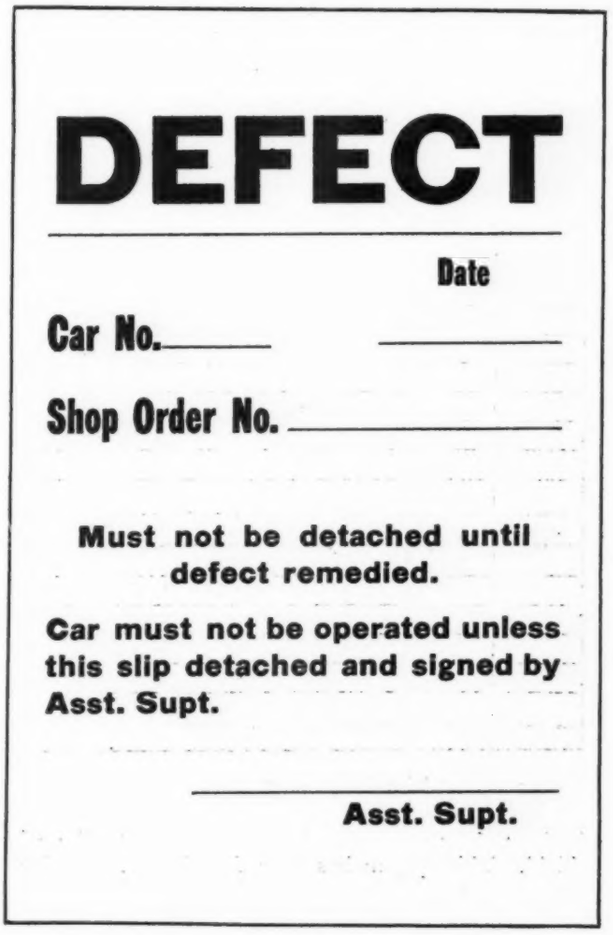
The heavy repair room, which is at the rear of the garage and near the office of the shop foreman, is now being outfitted with machinery. Up to the present time the Santa Fe Transportation Company has not had to make heavy repairs to any of its equipment. The shop room now contains a forge and anvil, an eight-inch bench grinder, a motor-driven brake-lining machine, an electric test board and bench, a battery charger and tester, a valve refacer, an automatic air compressor equipped with a five horsepower motor, a radiator-soldering tank with an ingenious elevator, two drill presses, a work bench equipped with a ½-in. electric drill, and a tool shelf mounted on wheels. At the pits, where running repairs are made, are located the power greasing machines. The tools used to make light repairs are kept in compartments of movable work benches which are mounted on casters.

The motor coaches and cars operated are not equipped with tools in the ordinary way. Instead each driver is given a tool bag which is sealed to prevent the drivers from using the tools unnecessarily on the road. When a tool bag seal is broken by a driver, it must be explained satisfactorily. These bags are numbered, the tools and parts contained in them are listed on the control board in the garage, and the contents of the bags are checked occasionally to see that none of the tools have been removed.

Operating Procedure

When a motor coach or car is brought into the garage for servicing or storage, its tank is filled with gasoline from the pump adjacent to the door of the garage, and it is then driven directly to the wash rack where it is thoroughly cleaned, the driver of the coach or car assisting the car washer in this operation. An inspection of the coach follows, this being made in accordance with the car and coach condition report which his been filled out by the driver, who checks the parts requiring inspection. This report is turned in to the shop foreman by the dispatcher immediately upon notification from the driver that the car or coach is ready for inspection after being washed. This report contains a space for the coach number, the name of the driver and the date, and a list of the major parts of the coach. These items are printed on the report sheet in the order in which a mechanic inspecting the equipment would come to them, beginning at the front of the coach and working around the left side to the rear and then back on the right side, the inspection of the interior equipment coming last. The car and coach condition report form is reproduced herewith.

When a defect in a coach is discovered a defect slip of the kind shown is pasted on the windshield, and this slip must not be detached nor must the coach be operated until the defect has been remedied and the slip detached and signed by the assistant superintendent. This defect slip, which is printed in red and can scarcely be overlooked, has spaces for the car number and the date and the shop order number covering the repair of the defects. The slip is gummed on the



DEFECT

Date

Car No._____ _____

Shop Order No. _____

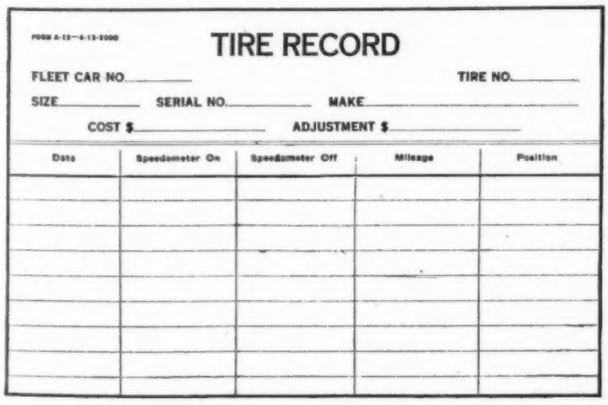
Must not be detached until defect remedied.

Car must not be operated unless this slip detached and signed by Asst. Supt.

_____

Asst. Supt.

The Defect Slip Which is Pasted on the Windshields of Cars Requiring Repairs



TIRE RECORD

FLEET CAR NO._____ TIRE NO._____

SIZE_____ SERIAL NO._____ MAKE_____

COST $_____ ADJUSTMENT $_____

Date	Speedometer On	Speedometer Off	Mileage	Position

The Individual Tire Record

S. F. T. CO.

DAILY SHOP TIME CARD

DATE_____ 192__

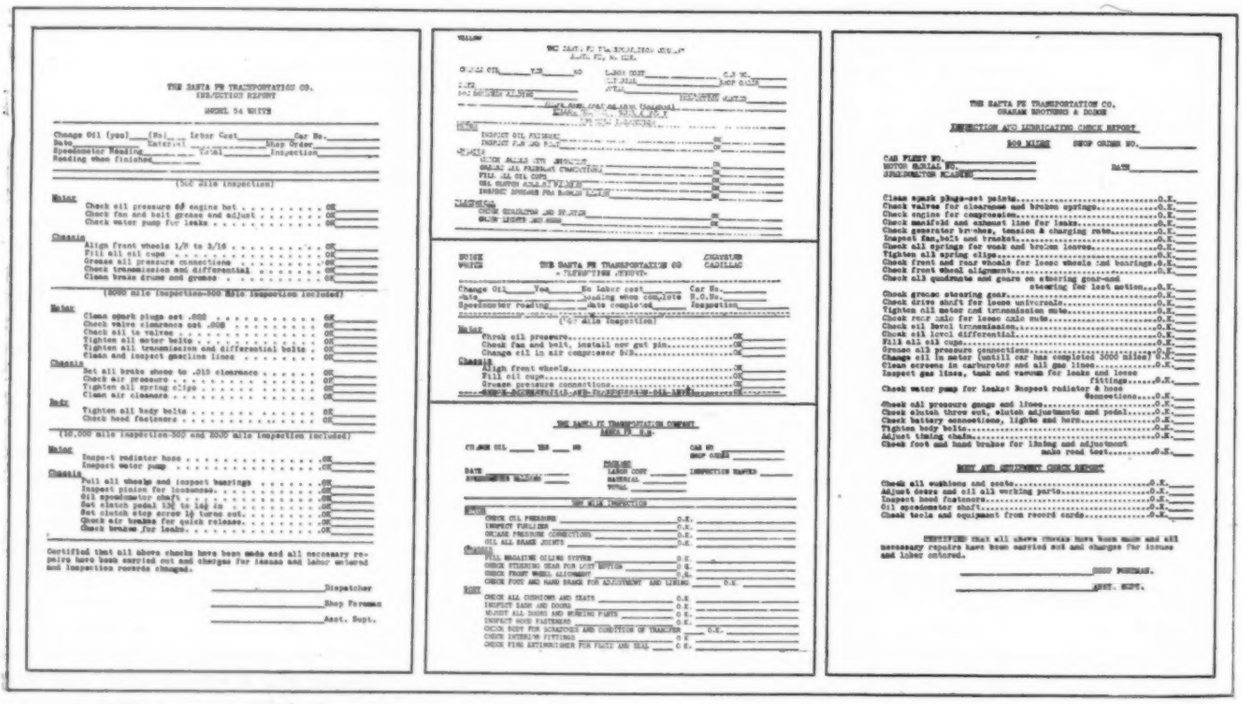
EMPLOYEE_____ NO._____

CASH ORDER NO.	HOUSE ORDER NO.	DESCRIPTION	TIME HOURS	TIME MIN.
		OVERTIME		

The Daily Shop Time Card

back at the top so that it can be stuck to the windshield. This system has been found most effective in preventing cars being operated by mistake while awaiting repairs. Maintenance work is controlled by the house repair order which is filled in in duplicate, showing the number of the car to be repaired, the date when repairs were ordered, the date when repairs were completed, a description of the work, the name of the mechanics making the repairs, the time required, the wage rate and the division of labor expenses as between the engine, the body, the chassis, the electrical parts and miscellaneous parts. The parts issued are itemized on the reverse side of the form. The cost of labor and the cost of parts are totalled and the total cost shown for each major unit of the car repaired. The original of the house repair order is then sent to the accounting department and the duplicate, which is on cardboard, is retained by the garage organization. These house repair orders are numbered serially. A daily time card is kept for each employee in the garage, this showing the date and name of the employee and his number, the cash order number, the house order number on which he is working, a description of the work done during the day and the time consumed, both on regular time and on overtime.

All of the equipment operated by the transportation company is inspected every 500 miles. All of the motor coaches and cars also have a 2,000 mile inspection, which includes the 500 mile inspection, and they also have either a 6,000 mile inspection or a 10,000 mile inspection, depending upon the kind of equipment, which also includes the 2,000 mile inspection. These inspection reports (there is a separate report for each make of motor coach or car) are reproduced herewith. The instructions governing the various inspections are most explicit. After the checks indicated have been made and all necessary repairs have been carried out and charges made for issues and labor entered and the inspection record changed, the inspection reports are signed by the dispatcher, the shop foreman and the assistant superintendent.



Separate Mileage Inspection Reports Are Kept for Each Make of Car Operated—The Three Central Reports Show Only the 500-Mile Inspection, But the Full Report Calls for Inspection at 2,000 and 10,000 Miles

The transportation company secures its tires by lease. A record of each tire is kept on a card which shows the tire number, the size, the serial number, the make and the cost, with spaces to show its mileage,

CAR AND COACH CONDITION REPORT

This form to be filled out and turned in to Shop Foreman by Dispatcher immediately upon notification from driver that car or coach is ready for inspection after being washed.

Coach or car Number_____ Driver_____

Date_____

Front bumper	R. R. Fender
Front License Plate	R. R. Wheel
L. F. Lamp	#4R. Body Panel & Glass
R. F. Lamp	#3R. Body Panel & Glass
L. F. Fender	#2R. Body Panel & Glass
R. F. Fender	#1R. Body Panel & Glass
L. F. Wheel	R. F. Door Panel & Glass
R. F. Wheel	R. Transfer
Motometer	Window Curtains
Hood	Upholstery
Hood Hooks	Instrument Panel
L. Tire Carrier	Dome Lights
R. Tire Carrier	Ceiling
Windshield	Terpaulin
L. Door Panel & Glass	Baggage Railing
#1L. Body Panel & Glass	Trunk
#2L. Body Panel & Glass	Tonneau shield
#3L. Body Panel & Glass	Wind Wings
#4L. Body Panel & Glass	Cigar Lighters
L. R. Door Panel & Glass	Vanity Case
L. R. Fender	Baggage Carrier
L. R. Wheel	Robes
L. Transfer	Jump Seats
Rear Bumper	Robe Rail
Tail Lamp	Chassis Oil System
Stop Lights	Windshield Wiper
Rear Comp. Doors	Brakes
Rear Comp. Door Fasteners	Brake Ratchet
Seal	

Signed_____
Dispatcher.

The Car and Coach Condition Report Is Used in Making Daily Inspections

position and the speedometer reading of the car to which it is applied when it is put on or taken off. A monthly tire retirement report also is kept showing the brand, the size, the type and the mileage.

[This is the second of a series of articles on the Santa Fe Transportation Company and its operating methods. The third will appear in a subsequent issue.—EDITOR.]

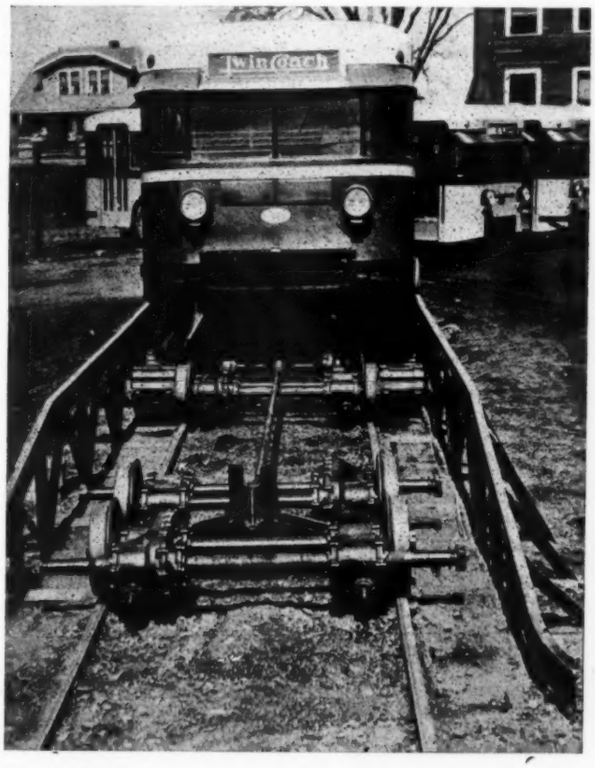
Interstate Line Not Allowed To Compete for Jersey Shore Traffic

The application of the Public Service Co-ordinated Transport, an operator of trolley cars and motor coach service in New Jersey, for authority to operate motor coaches between Camden and Atlantic City has been denied by the Board of Public Utility Commissioners. Hearings in this case were reported in the *Motor Transport Section* of February 25, page 490.

The proposed operation would have competed with the train service of the West Jersey & Seashore and the Atlantic City Railroad (subsidiaries, respectively, of the Pennsylvania and the Reading) on which lines the fastest train service in the United States is provided. These two railroads have already suffered heavy losses because of traffic diversion to motor coaches operating between Philadelphia, across the Delaware river from Camden, and the Jersey shore.

Twin Coach Combination Rail and Highway Unit

THE Twin Coach Corporation, Kent, Ohio, has recently developed a combination unit designed for operation either on the highway or on standard-gage railroad track. Special equipment is necessary to effect a transfer from highway to rail or vice versa. The equipment needed consists of a standard Twin Coach, a pair of trucks that resemble the ordinary four-wheel rail trucks and two raised side rails about 45 ft. long which form a trestle. On each of the four wheel hubs of the Twin Coach are fitted flanges four inches wide and 16 in. in diameter. The two side rails



View of the Rail Trucks—The Treadles Have Been Removed from the Truck in the Foreground

are erected to form a trestle on each side of the track with sufficient space to permit the passage of the coach and to allow the special wheel flanges to ride on them. For about a third of their length the side rails rise from the ground at about a 20-deg. angle, run horizontal for a little more than the wheel base of the Twin Coach (194 in.) and then descends to the ground again. The slope of the rails is the same at both ends of the trestle. This permits the coach to rise from the road by riding on the special wheel flanges. Between the side rails are two four-wheel rail trucks, separated from each other the exact length of the wheel base of the coach by a tubular connection. The trucks are identical in construction. The flanged rail wheels, which are 20-in. in diameter are mounted in bearings and each pair is connected by the usual axle. Beside one wheel of each pair is a gear case containing a helical gear connecting its axle to an outside counter shaft raised somewhat higher and extending out past the track wheels. On the

ends of these latter shafts are mounted chain sprockets. Connecting these sprockets on each side of the truck is a chain treadle about 10 in. in width. These chain treadles are placed so that the tires of the motor coach rest on them.

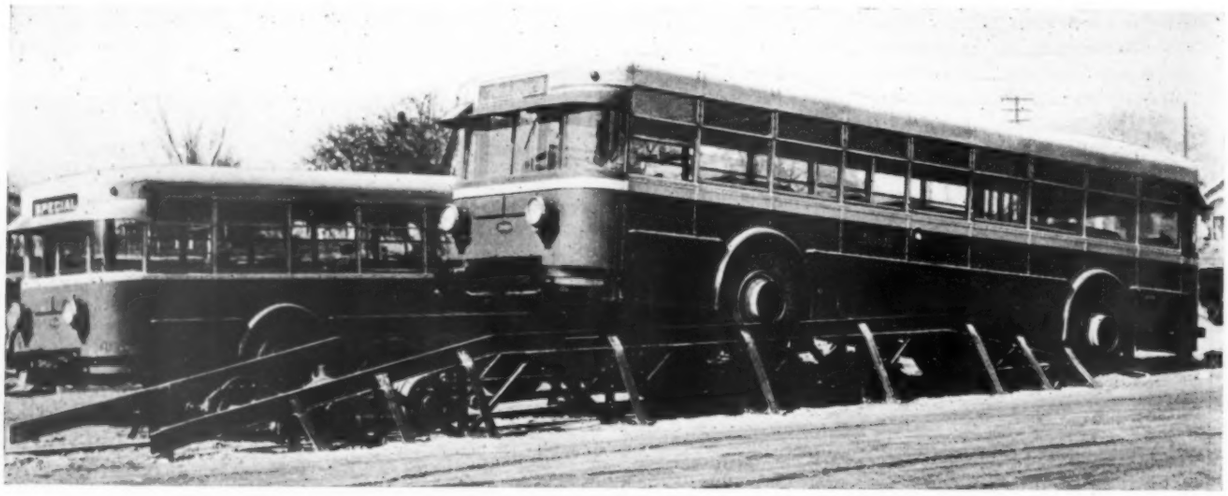
As the front wheels of the motor coach begin to descend at the other end of the trestle, a bolster plate attached to the center of the front axle catches an upright projection mounted on the center of the front truck and moves both trucks forward. As the coach and trucks move forward, the front coach tires descend to rest upon the chain treadle and the flanges eventually leave the side rails or trestle. The front end of the coach at this point rests on the rail trucks and the rear end is still supported by its wheel flanges on the trestle. As the forward motion progresses, the rear wheels descend upon the rear truck treadle, the wheel flanges leaving the side rails and the power of the coach engines is thus transmitted through the tires to the rail truck and the unit proceeds on down the track. The entire transfer operation is said to take less than one minute and the driver need not leave his seat, nor receive any assistance.

The operation is as easily reversed. The rail unit approaches the trestle, the front wheel flanges engage the side rails and rise with them, leaving the front truck. The rear trucks, however, continue to push the front truck forward until the rear wheels reach the trestle and rise from their truck, which is left standing in position to catch the next coach to be loaded.

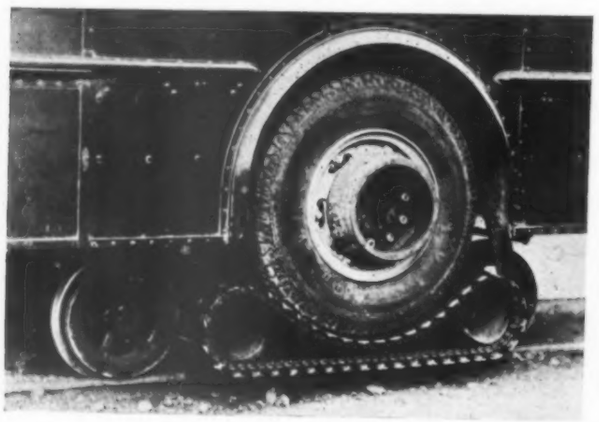
About two thirds of the weight of the coach is borne on the front and rear axles of the trucks through a swivel rubber bolster support which permits turning of the trucks to take all necessary rail curves. Only enough weight rests on the chain treadles to secure the most efficient traction from the coach tires.

By this method of power transmission a four-wheel drive and eight-wheel braking is obtained. Positive contact between tire and treadle is assured by comparing the 90-deg. contact with approximately 25-deg. contact obtained by bus tires on the road.

The coach is held safely to the rail trucks through the bolster plates on the front and rear axles which fit into padded depressions in the trucks. Danger of "jumping" the tracks is eliminated by the upright slotted projections which surround the bolster plates when in position. On each side of this center support are auxiliary supports which take the weight should a tire blow. This arrangement still permits movement of the trucks to take all ordinary curves or uneven track movement.



The Coach Moving Onto the Trestle Preparatory to Picking Up the Rail Trucks



The Coach in Position on the Rail Truck

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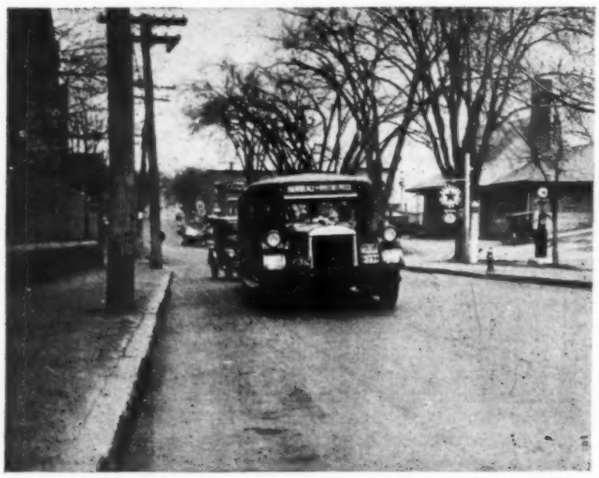


An N. E. T. Coach at Uxbridge, Mass.

Insurance or Reserve Fund to Pay Claims?

Ten roads report on practices with respect to liability protection—Views on subject differ

THE policies of the railway motor coach operating companies with respect to protection in the event of their having to meet liability claims are not entirely uniform. Some of the companies prefer to build up a reserve fund to take care of such claims, while others carry liability insurance in varying amounts in order to protect themselves in such emergencies. These facts were disclosed in the replies to a questionnaire sent to some of the leading railway motor coach operating companies.

Out of 10 roads which have reported, two rely upon the reserve fund method, although one of these companies discontinued this practice on July 1. The other eight companies carry liability insurance, although some of the officers of these companies are apparently not completely satisfied with this method.

On the basis of the replies to the present questionnaire it would appear that liability insurance is generally carried by the smaller operating companies, or those organized comparatively recently, while the reserve fund method of providing money to handle claims is used by the larger organizations. Even to this apparent rule, however, there are marked exceptions.

Southern Pacific

According to T. B. Wilson, vice-president and manager of the Southern Pacific Motor Transport Company, liability insurance is not carried by his organization. Furthermore, this company discontinued, on July 1 the practice theretofore in effect of building up a reserve fund to take care of claims. This fund was being accumulated by charging operating expenses each month with one cent per motor coach mile for highway service and one mil per mile for street car service.

"We now operate in the states of California, Oregon and Nevada," says Mr. Wilson. "California laws impose no regulation with respect to operators carrying liability insurance. The laws of Oregon require the public service commission, as a condition to the granting of a permit, to require the applicant to file with the commission a liability and property damage insurance policy in such penal sum as the commission may deem necessary adequately to protect the interests of the public. It further provides that substitute security may be accepted in lieu of insurance policies by the filing of cash, or federal or state bonds. In our own case we filed bonds. In Nevada, we have an interstate operation between Reno and Truckee, which does not fall under the jurisdiction of the public service commission."

New England Transportation Company

The New England Transportation Company, which is the largest railway operator of motor coaches in the United States, has adopted the reserve fund method and accumulates its reserve at the rate of four per cent of its gross revenues annually.

"Different states in New England have different rules, regulations and laws," says F. S. Hobbs, general manager of the company. "For example, Rhode Island does not compel insurance. Massachusetts accepts our bond of $100,000, which is deposited in the state treasury. In New York, we carry what is known as 'catastrophe insurance.' Under the conditions in which we operate in New England perhaps it would be best for us to handle this matter as the different states think best, although I see no objection to building up a reserve fund to take care of such claims."

Santa Fe

At the present time, the Santa Fe Transportation Company, according to R. H. Clarkson, carries full liability insurance with a recognized company. It does not use the reserve fund method. On its 13-passenger White motor coaches it carries liability coverage of $10,000-$150,000; on its 5-passenger Packard equipment, $10,000-$100,000; on its 25-passenger White equipment, $10,000-$250,000; on its 25-passenger Yellow coaches, $10,000-$250,000; and on its Cadillac 16-passenger equipment $10,000-$200,000.

"New Mexico at present has no regulatory commission functioning legally in the control of motor transportation," says Mr. Clarkson, "although legislation on this matter is anticipated within the next three or four months. In Arizona the state corporation commission rules require that all transportation companies carry liability insurance with a recognized company. Up to the present our practice in this respect appears to us to be the best one for our particular operations in this territory."

Reading and Rutland

"We considered this matter very carefully before starting operations," says A. C. Tosh, superintendent of the Reading Transportation Company, "and decided that it would be desirable, for the first year at least, to carry outside insurance. In Pennsylvania, we carry $20,000-$150,000 liability, that is $20,000 for one person and $150,000 for one accident and in New Jersey, $20,000 and unlimited liability, the latter being a requirement of the state of New Jersey. We are required by the Public Service Commission of Pennsylvania to carry liability insurance, but the amount is not fixed as in the case of New Jersey. We will be in better position, based on our experience the first year, to determine whether it will be desirable to continue as at present or to set up a reserve fund to take care of insurance."

Liability insurance is carried by the Rutland Transportation Corporation in the amount of $20,000 and $200,000 personal liability, $2,000 property damage, and full collision insurance with $500 deductible.

"The regulations of the Public Service Commission of the state of New York," says Geo. L. R. French, vice-president and general manager, "provides that motor coach operators shall carry $2,500-$5,000 personal liability and $500-$1,000 property damage insurance, and the Public Service Commission of the state of Vermont has authority to state the amount of insurance which shall be carried by the motor coach company. Such amount is stated in the Certificate of Public Good, which in our case is $5,000-$25,000 personal liability and

$2,000 property damage insurance. Inasmuch as there are no complete data available to show the extent of the liability in connection with our motor coach operations, because of the comparatively short time in which we have been operating, we feel that it is desirable for us to carry full liability insurance."

Other Roads

The Copper Range Motor Bus Company carries liability insurance in the amount of $15,000 and $100,000 personal liability and $1,000 property damage on each motor coach. G. H. Wescott, general manager, feels that this practice is the best for small operations, although he says that possibly for larger operations this could be taken care of more advantageously through a reserve fund.

M. W. Kirkwood, general manager of the Canadian Pacific Transport Company, advises that liability insurance is carried because of the fact that the Public Vehicle Act of Ontario provides that insurance must be carried in a company approved by the department, and that the policy be filed with the department. The Canadian Pacific carries $30,000 legal liability for bodily injury or death in one accident, or $10,000 for one person. Mr. Kirkwood states that his company prefers the reserve fund plan, but has no choice in view of the governing regulations.

The SamOset Company, subsidiary of the Maine Central, carries $10,000 and $20,000 liability insurance and $1,000 property damage insurance. This is required by the laws of the state of Maine governing motor coach operations. Similarly the Nashville, Chattanooga & St. Louis Motor Transit Company carries liability insurance in the amount of $50,000, this being required by the Tennessee law.

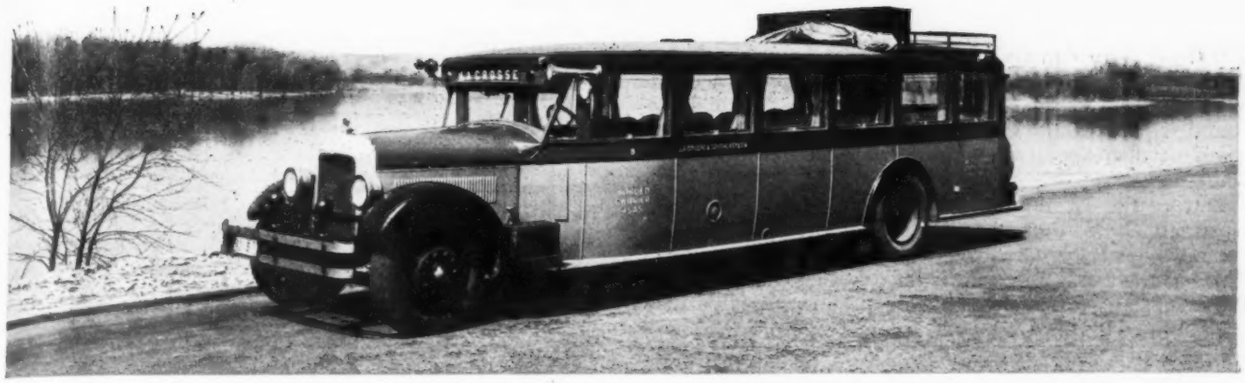
The Norfolk Southern Bus Corporation, according to L. B. Wickersham, general manager, carries liability insurance on its motor coaches in the amount of $50,000 for any one accident. The company is not building up a reserve fund to take care of claims. The State Corporation Commission requires either insurance or bond for the protection of the public.

"I am not at all satisfied with the insurance feature of our operation," says Mr. Wickersham. "However, it is the best we can get at the present. Only the very large motor coach companies operating many units can afford to carry their own insurance, in my judgment. Our experience has shown that we have actually had only around $500 in liability payments in our two years of operation. Our insurance premiums, however, run around ten times this. Still we could not afford to be without insurance, as any one serious accident would have to be charged against too small an operation. I think the real solution is a pooling of insurance risks by a large number of the motor coach companies in one section.

"On the electric railway we set aside about one per cent of our gross revenue for insurance reserve, but, of course, we operate many times the service that we do with the motor coaches. I am satisfied that by reason of not being able to average up the hazard over a large area and many companies and conditions, the insurance against motor coach line operation is unnecessarily heavy, and that this condition could be overcome to a certain extent by some pooling of the risk by all the companies of a state or district. Of course, the interurban operation is the only one in which we are interested and this would have to be separate from the city motor coaches, which usually carry their own risks as they have operations sufficiently large to justify this."

* * * *

International Harvester Speed Truck in Service in Illinois Central Stores Department



Type Y Yellow Parlor Coach Operated by La Crosse & Southeastern

Motor Coaches Recover Lost Passenger Traffic

La Crosse & Southeastern, operating on highways, shows substantial increase in passenger business over previous rail operations

FOR a number of years prior to the construction of hard roads in its territory, the La Crosse & Southeastern, with a 38-mile line from La Crosse, Wis., to Viroqua, had passenger revenues averaging about $80,000 per annum. With the coming of hard roads, however, its passenger revenues decreased rapidly, due to the competition of the private automobile. The La Crosse & Southeastern never has had to meet the competition of independent motor coach lines. In an effort to regain its lost passenger business, the company began the operation of motor coaches on the paved highway paralleling its railway line between La Crosse and Viroqua, and passenger service on the railway was almost eliminated. The effect on the passenger revenues of the company of this substitution of motor coach service for rail service was almost immediately apparent. From May 1, 1925 to November 30 of the same year, the passenger revenues on the trains between La Crosse and Viroqua were $8,219. In the corresponding months of 1927, after motor coach service had been put into effect, passenger revenues on the La Crosse-Viroqua lines were $12,182, the gain following the substitution of motor coach service being $3,963, or 48 per cent.

The railway organized its highway subsidiary, the La Crosse & Southeastern Transportation Company, in 1926 and made its first experiments in motor coach operation during that year. Previously it had substituted a gasoline-rail motor car for one steam train, but while operating expenses were greatly reduced by this substitution the revenues continued to decrease rapidly. In 1927 when all of the patrons had had an opportunity to use the motor coach service and to compare it with rail service, they were asked to indicate their preference. Approximately 80 per cent of the answers to the questionnaire favored motor coach service. Accordingly, in May 1927, the rail car service was discontinued and motor coach service substituted with the result stated above that in the first seven months of operation a 48 per cent increase in passenger traffic was handled by the motor coaches. This was accomplished in spite of the fact that fares remained unchanged and the schedules were practically undisturbed.

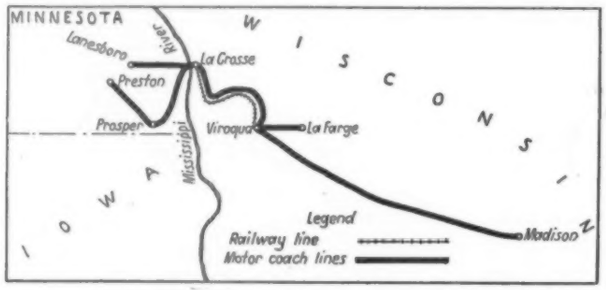
Commenting on the results of its motor coach operation, A. S. Cargill, vice-president of the La Crosse & Southeastern, says, "Our experience tends to strengthen our belief that in our particular case the substitution of motor coach operation for rail service offers the only means available for meeting the competition of the private automobile successfully. We are quite confident that eventually we can build our traffic up to the point where it was before the private automobile destroyed it." Incidentally, through the elimination of passenger service on the railway, except for one daily round trip mixed train, the La Crosse & Southeastern has been able to reduce the operating expenses of the railroad by an amount that approximates the amount of the loss in revenue from passenger service.

Additional Lines Established

Since the establishment of its original 35-mile motor coach route between La Crosse and Viroqua, the La Crosse & Southeastern Transportation Company has begun the operation of additional routes which give it a highway system mileage of approximately 290. The first step in this direction was the extension of the La Crosse-Viroqua line to Madison, a distance of 138 miles from La Crosse. Two round trips per day are operated between La Crosse and Viroqua, with two additional daily round trips between La Crosse and Madison via Viroqua. Later two lines across the Mississippi river into Minnesota were established, one of these extending from La Crosse to Preston, Minn., a distance of 68 miles, and the other from La Crosse to Lanesboro, Minn., a distance of approximately 50 miles. On the La Crosse-Preston line there is one daily round trip over the entire route with an additional daily round trip between La Crosse and Prosper, Minn. One round

trip daily is operated on the La Crosse-Lanesboro line. Another intrastate line in Wisconsin is a branch from Viroqua to La Farge, a distance of 31 miles. One daily round trip is made by a motor coach on this line. The company also operates a motor truck service over this route.

During the 12 months period from May 1, 1927 to April 30, 1928, the transportation company had passenger revenues from its various lines which almost equaled those of the railway in the earlier days when the railway did a substantial passenger business. During this period,



La Crosse & Southeastern Railway and Highway Lines

the total passenger revenues, including revenue derived from the transportation of newspapers, baggage and express, on the La Crosse-Viroqua line were $19,907.60; on the Viroqua-Madison line they were $45,004.90; and on the Minnesota lines, operation of which began in December, 1927, they were $4,194.03, making aggregate passenger revenues for the highway system of $69,106.53.

The transportation company now owns and operates seven motor coaches. Its fleet comprises four 29-passenger, Type-Y Yellow coaches of the parlor type, manufactured by the General Motors Truck Company, Pontiac, Mich.; Two type-X 21-passenger Yellow parlor coaches; and one 29-passenger Fageol parlor-type motor coach. Two of these coaches are in regular service on the La Crosse-Madison line; one makes the four trips daily between La Crosse and Viroqua; one is used on the La Crosse-Preston route; one on the La Crosse-Lanesboro route; and one on the Viroqua-La Farge route. The other coach is held in reserve.

During the first 11 months of 1927, the Yellow coaches covered 187,890 miles at a total cost of 30 cents per coach-mile. During this period coach depreciation was figured at 33-1/3 per cent per annum, but since experience has shown this figure to be too high, depreciation this year is being figured at the rate of 20 per cent per annum. This change alone will reduce the operating costs by over two cents per mile. The 30 cent per mile operating cost should also be reduced further this year, since road construction, which was going on last year and which had an unfavorable effect upon the operating costs, has been completed.

The cost per mile of maintenance of equipment during 11 months of 1927 was 11.5 cents; the transportation charge was 11.9 cents; general expenses were 3.9 cents; and supervision, 3 cents. An analysis of these operating costs, showing the charges in detail for the various items of expense, is given below.

La Crosse & Southeastern Transportation Company
Operating Costs for 11 Months of 1927

	Cents per Mile	
Maintenance of Equipment		
Maintenance	.0475	
Depreciation (33 1/3 per cent)	.0676	
		.1151
Transportation		
Drivers	.0347	
Gasoline	.0271	
Oil and grease	.0066	
Tires and tubes	.0188	
Insurance	.0190	
License	.0093	
Other transportation	.0035	
		.1190
General		
Stations and tickets	.0106	
Rental of equipment	.0056	
Loss and damage, injuries	.0016	
Advertising	.0014	
Dead mileage	.0026	
Garage rent	.0045	
Snow removal	.0096	
Other general	.0030	
		.0389
Supervision		
Salaries and expenses	.0204	
Stationery, telephone and auto expense	.0081	
Other supervision	.0017	
		.0302
Total expense		.3032

Rutland Motor Coaches Reduce Railway Operating Expenses

SINCE it began the operation of two motor coaches in replacement of mixed train service in September, 1926, up to and including March, 1928, the Rutland has effected a net saving of $26,590.28 in the cost of providing passenger service. At the same time, the motor coaches have carried an increased number of passengers and received more revenue than the mixed trains formerly operated.

Describing the results of its motor coach operations, Geo. L. R. French, vice-president and general manager of the Rutland, says, "Our motor coach operation was established for the purpose of providing service in lieu of a mixed train which was operated one trip week days

Table I—Savings Effected by Motor Coach Substitution

	Savings In Train Expenses	Loss From Motor Coach Operation	Net Saving
September 20 to December 31, 1926	$5,604.41	$1,284.17	$4,320.24
January, 1927	2,153.22	801.43	1,351.79
February	1,629.84	312.37	1,317.47
*March	1,693.77	1,209.74	484.03
April	1,994.04	451.25	1,542.79
May	2,025.54	334.91	1,690.63
**June	2,041.29	611.46	1,429.83
July	1,604.62	320.95	1,283.67
August	1,626.00	266.43	1,359.57
September	1,243.35	459.94	783.41
October	1,829.66	408.63	1,421.03
November	1,858.87	169.20	1,689.67
December	2,540.32	482.80	2,057.52
January, 1928	2,288.49	194.35	2,094.14
February	2,537.43	431.88	2,105.55
***March	2,764.20	1,105.26	1,658.94
Total	$35,435.05	$8,844.77	$26,590.28

* On account of highway conditions, motor coaches could not be operated from March 15 to 28, inclusive, and train service was restored, in accordance with an order of the Public Service Commission. The cost of operating the special train was $681.50, and this amount has been charged to the cost of motor coach operation.

** On account of equipment failure, train service was restored for one day at an expense of $111.24, which has been charged to the cost of motor coach operation.

*** On account of highway conditions, motor coaches could not be operated from March 20 to 31, inclusive, and train service was restored in accordance with an order of the Public Service Commission at an expense of $677.20, which has been charged to the cost of motor coach operation.

in each direction between Bennington, Vt., and Chatham, N. Y. The motor coach substitution permitted the operation of local freight trains on alternate week days. On account of passenger service on these trains being discontinued, a heavier locomotive is used for the purpose of handling heavier tonnage, thus relieving through trains and reducing helper service. The statement showing the number of passengers carried by motor coach and the revenue received, as compared with those on the trains for the previous year, indicates that the motor coaches, on a percentage basis, have carried substan-

tially more passengers and received more revenue than the mixed trains, although there has been a decrease in the number of passengers carried and the revenue received from motor coach operation this year compared with last year."

Operating Expense Saving

Table I shows the savings in operating expenses effected by the motor coach operation in replacement of mixed train service. Table II shows the number of passengers handled and the revenue received by the motor coaches, compared with the number of passengers handled and the revenue received by the mixed trains in the previous year. Table III is a statement of the passengers handled and revenue received by the Rutland Transportation Corporation this year as compared with last year.

Table II—Comparative Statement of Passengers Handled and Revenue Received on Motor Coaches and Mixed Trains (latter for previous year)

	Motor Coach		Mixed Trains		Increase			
Month	Passengers Handled	Passenger Revenue	Passengers Handled	Passenger Revenue	Passenger Handled	Per Cent	Passengers Revenue	Per Cent
1926								
Oct.	481	$273.32	392	$160.46	89	23	$112.86	70
Nov.	642	262.14	320	131.25	322	100	130.89	100
Dec.	902	329.08	537	207.38	365	68	121.70	59
1927								
Jan.	768	300.13	606	212.78	162	27	87.35	41
Feb.	826	326.22	564	201.54	262	46	124.68	62
March	458	159.94	407	128.35	51	12.5	31.59	25
April	803	313.00	628	221.16	175	28	91.84	42
May	807	271.44	461	160.67	346	75	110.77	69
June	740	297.82	462	162.14	278	60	135.68	84
July	1,057	532.99	689	294.72	368	53	238.27	81
Aug.	953	525.64	703	310.02	250	36	215.62	70
Sept.	788	360.53	532	217.08	256	48	143.45	66

Table III—Statement of Passengers Handled and Revenue Received on Motor Coaches

	1927		1926		Increase or Decrease			
Month	Passengers Handled	Passenger Revenue	Passengers Handled	Passenger Revenue	Passengers Handled	Per Cent	Passenger Revenue	Per Cent
Oct.	645	$249.83	481	$273.22	164 (i)	34	$23.39 (d)	9
Nov.	637	227.79	642	262.14	5 (d)	1	34.35 (d)	13
Dec.	714	263.03	902	329.08	188 (d)	21	66.05 (d)	20
	1928		1927					
Jan.	895	403.16	768	300.12	127 (i)	17	103.04 (i)	34
Feb.	643	210.53	826	326.22	183 (d)	22	115.69 (d)	35
March	436	147.89	458	159.94	22 (d)	5	12.05 (d)	7
April	165	87.74	803	313.00	638 (d)	79	225.26 (d)	72
May	685	244.15	807	271.44	122 (d)	15	27.29 (d)	10

Note: On account of highway conditions, motor coaches could not be operated from April 1 to 21, inclusive.

State Authority Over Interstate Operations Denied

Sections of the Texas motor law applying to motor coaches operating in interstate service were declared to be unconstitutional by the Federal District Court at Dallas, Tex., recently in a suit brought by the Hi-Ball Transit Company against the Railroad Commission of Texas for a permanent injunction restraining the commission from interfering with the company's interstate motor coaches operating between points in Texas and California. The application for a permanent injunction against the railroad commission was denied because evidence had been introduced which showed that the operating company had been doing an intrastate business. Because of this operation the sections of the law which the court declared unconstitutional as to interstate operation were held to be in force.

The suit was filed when the railroad commission refused to issue a permit for operation of motor coaches by the company on the ground that the latter had not filed a financial statement to show responsibility. The court in its opinion declared that the railroad commission had no right to refuse the permit on such grounds, as it had not power to control interstate operations other than by police power.

Motor Transport News

THE SOUTHERN PACIFIC MOTOR TRANSPORT COMPANY began on July 26 the operation of motor coach service between Medford, Ashland and Klamath Falls. Three round trips daily are operated by the motor coaches on this line.

UNDER AN ACT recently passed by the legislature of South Carolina, the regulation of motor vehicles operating in that state has been placed under the jurisdiction of the railroad commission instead of the highway commission as heretofore.

THE SOUTHERN PACIFIC MOTOR TRANSPORT COMPANY has acquired the Parker motor coach line between Salem, Ore., and Falls City, and will operate motor coaches over this route and also to a connection with its electric line at Derry station. Electric service in and out of Dallas, Ore., at Gerlinger was discontinued on July 22 and motor coach service substituted.

THE READING TRANSPORTATION COMPANY will take over an independent motor coach line now being operated between Reading, Pa., and Hamburg, 18 miles, if the Public Service Commission grants approval for the transfer of the certificate of convenience and necessity. A hearing is scheduled for August 2.

THE SOUTHERN PACIFIC MOTOR TRANSPORT COMPANY has applied to the Oregon Public Service Commission for authority to extend its motor coach service from Roseburg, Ore., to Marshfield, and also from Marshfield to Powers. The company proposes to operate one round trip daily between Roseburg and Marshfield and two round trips daily between Marshfield and Powers.

THE GEORGIA RAILROAD, it is reported, has been granted permission by the Georgia Public Service Commission to discontinue certain steam train service between Monroe, Ga., and Social Circle, a distance of 10 miles, and to operate a substitute motor coach service. The motor coaches will make four round trips daily and will be operated by the railway subsidiary, the Georgia Highway Transportation Company.

A REPORT received from the Illinois Central too late for inclusion in the tabulation of railway motor coach and truck operations, which was published in the June 23 *Motor Transport Section,* shows that this company has one truck operating under contract for the transportation of employees between Baton Rouge, La., and North Baton Rouge; ten trucks and seven tractors used in terminal freight service at Chicago, one truck used in a similar way at New Orleans, La., and another truck at Memphis, Tenn.

THE METROPOLITAN MOTOR COACH COMPANY, an Insull property, on July 1 took over the operation of the extensive motor coach system of the Chicago, North Shore & Milwaukee (the North Shore Line). Previously the Metropolitan Company had operated only the line between Chicago and Milwaukee, Wis., but it now has 12 additional routes in northern Illinois and southern Wisconsin. Fred A. Klock is general manager of the Metropolitan system which includes, in addition to the Metropolitan Motor Coach Company, the Western Motor Coach Company, the Niles Center Transit Company, the Northwestern Transit Company and the Evanston Bus Company.

Georgia Short Lines Begin Motor Coach Operation

The Wadley Southern and the Louisville & Wadley on July 4 began the operation of a motor coach and truck line for passengers and freight from Wadley, Ga., to Louisville, a distance of 10 miles, and from Wadley to Swainsboro, a distance of 20 miles. The operation is carried on by a subsidiary, the Short Lines Motor Transport Company. A combination passenger, baggage, mail and express motor coach of the type operated by the Central of Georgia (described in the *Motor Transport Section* of April 28, page 1022) has been purchased

from the Mack-International Motor Truck Corporation.

Two round trips per day will be made between Wadley and Louisville and one round trip per day between Wadley and Swainsboro. In addition to its line service for passengers and freight, the combination motor coach and truck will be used in terminal freight service at Louisville and Swainsboro.

A Northland Operation in Oregon

According to press reports, the Northland Transportation Company, subsidiary of the Great Northern, was to begin on July 20 operation of motor coach service between Bend, Ore. and Klamath Falls, a distance of approximately 130 miles. Two daily round trips were to be made over this route at the beginning. Announcement of the service was said to have been made by R. W. Budd, manager of operations of the Northland. This is the first instance of motor coach operation at the western end of its line by the Great Northern, which has an extensive highway system in Minnesota.

Boston & Maine Inaugurates All-Expense Tours

On July 3, the Boston & Maine Transportation Company began the operation of a number of all-expense tours through northern New England by motor coach, train and steamer. The tours are of two to seven days duration and extend to such points of scenic interest as the White mountains, the Mohawk Trail, Poland Springs, Lake Winnipesaukee and Ausable Chasm. Each tour is accompanied by a tour conductor and the prices of the trips include all transportation charges, whether by motor coach, train or steamer, admission fees and hotel accommodations. When the tours include travel by train, parlor car seats are provided. The Boston & Maine's parlor-type Yellow coaches are used exclusively in the tours service.

Milwaukee Contracts for Additional Motor Coach and Truck Service

The Chicago, Milwaukee, St. Paul & Pacific has recently entered into several contracts with motor coach and truck operating companies for the provision of passenger and freight service on the highway co-ordinated with rail service. Under a contract with the Safety Coach Company, Wausau, Wis., one round trip per day is being made for the railway over the 19 mile route from Minocqua, Wis., to Boulder Junction. One motor coach is used on this route. Under a contract with the Kapowsin Stage Company, six motor coaches are being used between Tacoma, Wash., and Kapowsin, a distance of 23 miles. Two round trips daily are made on this route, except on Sunday when one round trip is operated.

Under a contract with the Tacoma-Ashford Transit Company, 19 motor coaches are being used between Tacoma, Wash., and Morton, via Ashford, a distance of 78 miles. Two round trips daily are made over this route. The Milwaukee has contracted with the Eatonville-Tacoma Stage Company for motor coach service between Tacoma and Eatonville, a distance of 32 miles. Three motor coaches are used on this route, making two round trips daily, except Saturday and Sunday when three round trips are operated.

For freight service, the Milwaukee has a contract with the Tacoma-Ashford Transit Company for one motor truck which is operated between Tacoma and Morton.

B. & M. Extends Truck Service

Co-ordinated motor truck and rail handling of small lot merchandise shipments over the Boston & Maine to expedite the movement between New England industrial centers and other sections was extended on July 16 to 37 new points in Massachusetts and New Hampshire. This extension comes from its proved convenience and savings of time and cost to shippers and consignees in other Boston & Maine territory. Since its inception last August this service, combining fast local trucks with fast through merchandise rail cars, has grown so rapidly that the Boston & Maine merchandise truck fleet already numbers 68.

By this operation, devised to meet changing conditions and conserve small lot merchandise shipments to the railroad, solid l. c. l. cars are made up at main line concentration points from merchandise brought in by truck, and the car is speedily forwarded on through trains to points in New England, the West and the South. Solid cars of small lot merchandise received at these points on through trains inbound are immediately broken up for quick distribution to outlying stations by motor truck instead of waiting for way cars on local freight trains. At many points savings of from several hours to three days have been made.

The centers of the new trucking areas are: Lawrence, Mass., from which trucking has been in progress several months; Lowell, Mass., already in trucking territory; and Salem, Mass., Manchester, N. H., and Newburyport, Mass., to which the trucking operation is new.

New points to be served from Lawrence include: Ballardvale, Ward Hill, Groveland, Georgetown, Byfield, Boxford, Topsfield, South Middleton, North Reading, Atkinson, Westville, Plaistow, Hampstead, Sandown, Fremont, East Kingston, Newton Junction, Raymond and Newton.

From Salem the following stations will be served: West Peabody, Tapleyville, Danvers, Danversport, Marblehead, Beverly Farms, Manchester, Magnolia, Rockport, Essex, Ipswich, Hamilton and Wenham, and Rowley.

L. c. l. freight originating or delivered at North Wilmington will be handled by trucking based on Lowell, Newbury freight will be handled from Newburyport, and Auburn, N. H., and Candia, N. H., freight from Manchester, N. H.

Orders for Equipment

THE SOUTHERN PACIFIC MOTOR TRANSPORT COMPANY has ordered two Type-Y 29-passenger and two Type-X 17-passenger parlor motor coaches from the General Motors Truck Company, Pontiac, Mich.

THE UNION PACIFIC STAGES, INC., has accepted delivery of two parlor-type motor coaches from the American Car & Foundry Motors Company, New York. The coaches have seats for 22 passengers and built-in baggage compartments.

THE NEW ENGLAND TRANSPORTATION COMPANY, subsidiary of the New York, New Haven & Hartford, has ordered five intercity-type motor coaches from the Versare Corporation, Albany, N. Y., for service between Providence and Bristol, R. I.

THE SOUTHERN PACIFIC MOTOR TRANSPORT COMPANY, subsidiary of the Southern Pacific, has accepted delivery of two six-cylinder, parlor-type motor coaches from the Fageol Company of California.

THE NEW ENGLAND TRANSPORTATION COMPANY has ordered six Type-Y parlor coaches from the General Motors Truck Company, Pontiac, Mich.

THE SHORT LINE MOTOR TRANSPORT COMPANY, subsidiary of the Wadley Southern and the Louisville & Wadley, had purchased a Model-AB motor coach, with a city-type body, from the Mack-International Motor Truck Corporation, New York. The motor coach is a combination passenger, baggage, mail and express carrier with seats for passengers in front and an enclosed mail, baggage and express compartment at the rear.

Among the Manufacturers

C. W. Rhoades has been appointed sales engineer of the **Gunite Corporation**, Rockford, Ill., to be in direct contact with the motor coach field in the sales of Gunite brake drums.

The Motor Wheel Corporation, Lansing, Mich., has awarded a contract for the construction of a steel and brick addition to its pressed steel plant at Lansing. More than $100,000 will be spent in the construction of this addition